THE ARCHITECT & BUILDING NEWS

C.P

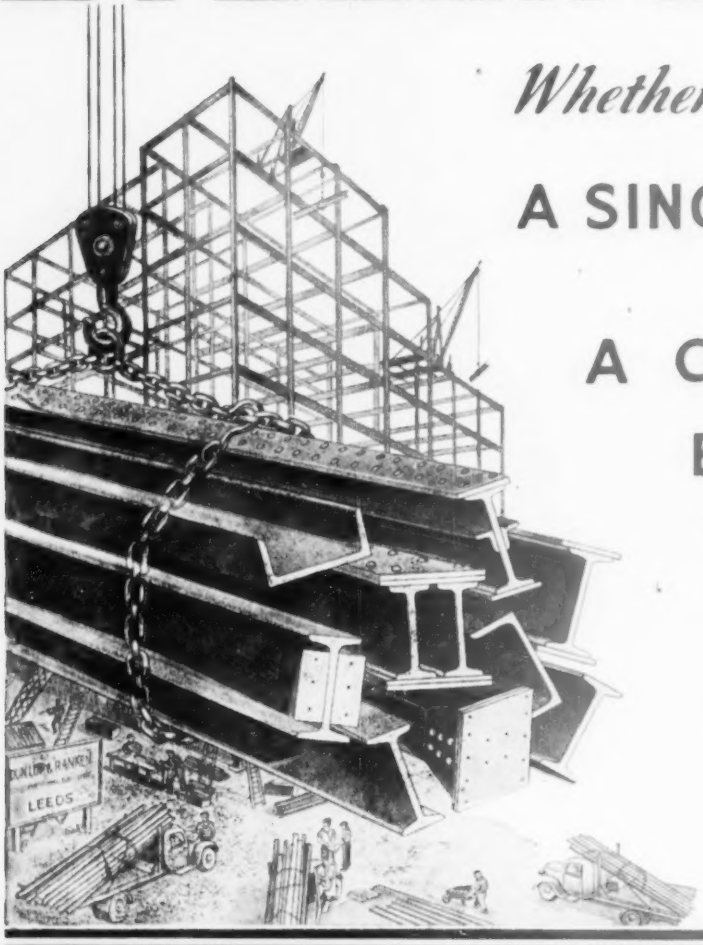
ART INSTITUTE, KANSAS CITY, U.S.A.

SHIPBUILDERS' OFFICES, WALLSEND-ON-TYNE

DEVELOPMENTS IN TIMBER TECHNIQUE

MARCH 3, 1950 · VOL 197 · NO 4237 · ONE SHILLING WEEKLY

STEELWORK



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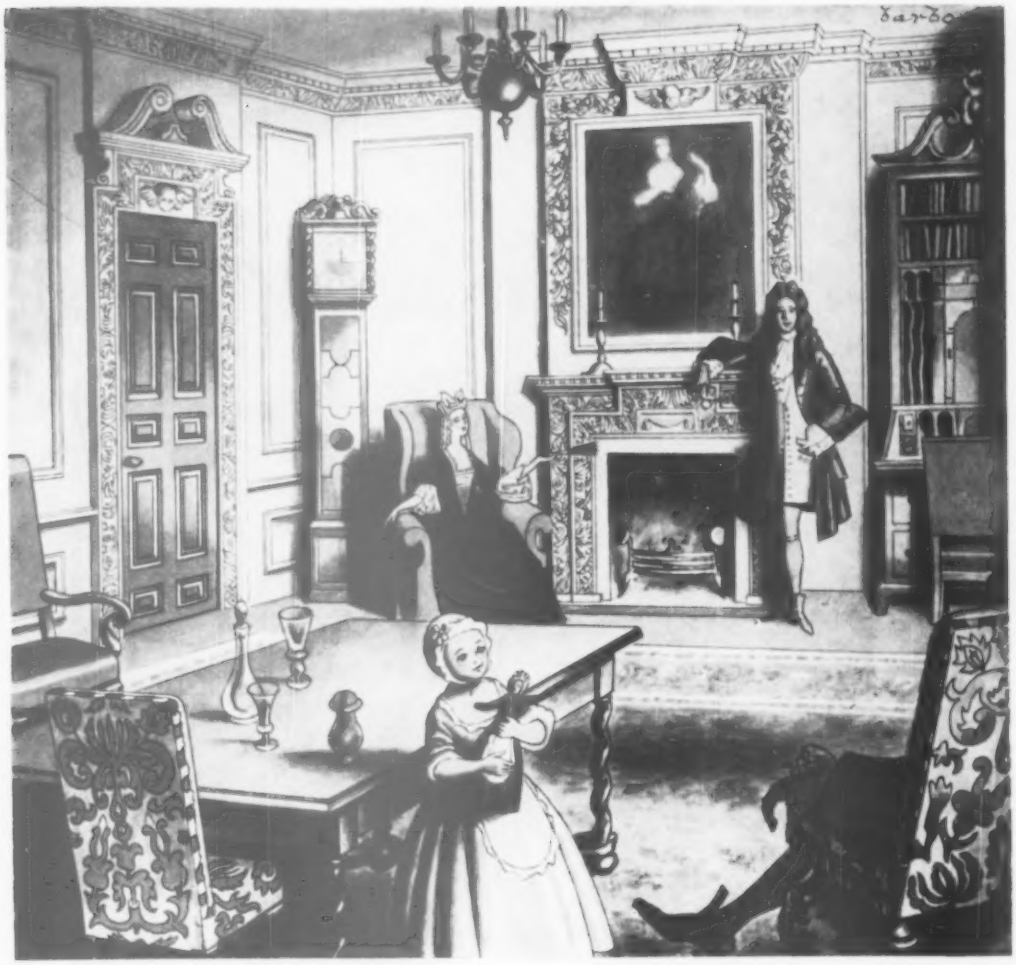

The age of Reason

The reign of Queen Anne saw an England convinced in the power of man. All that was worth knowing had been discovered by the new learning of science. Art and life were finely balanced — poetry was satirical, prose, polished and urbane. Contentment and propriety are the key-notes of its buildings, beautiful in their proportions. Architects, in the tradition of Inigo Jones and Wren built many houses of reasonable size that were comfortable and convenient.

The excesses of a later age, when houses were built for show and slavish imitations of neo-classic rules were in fashion, have now passed and a new Age of Reason has begun in architecture. Where beauty and utility again combine, Celotex will have a part to play of the first importance.

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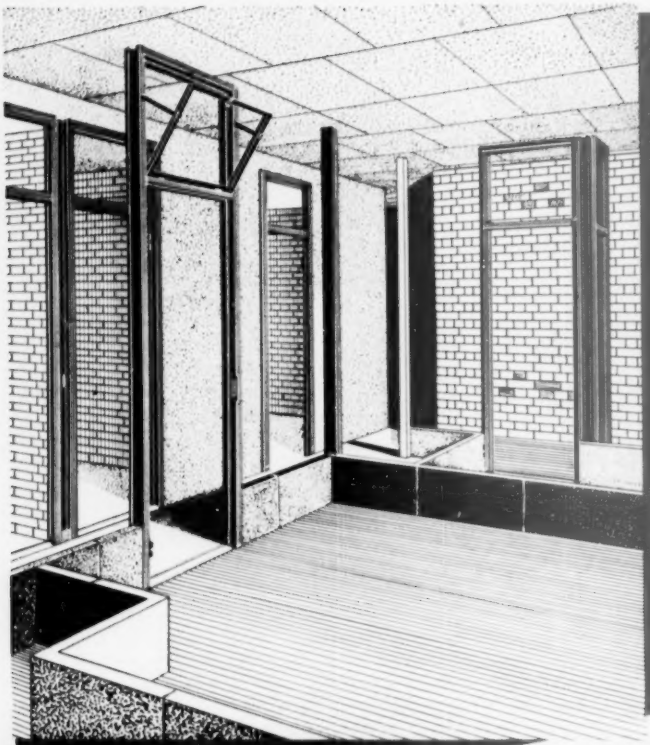

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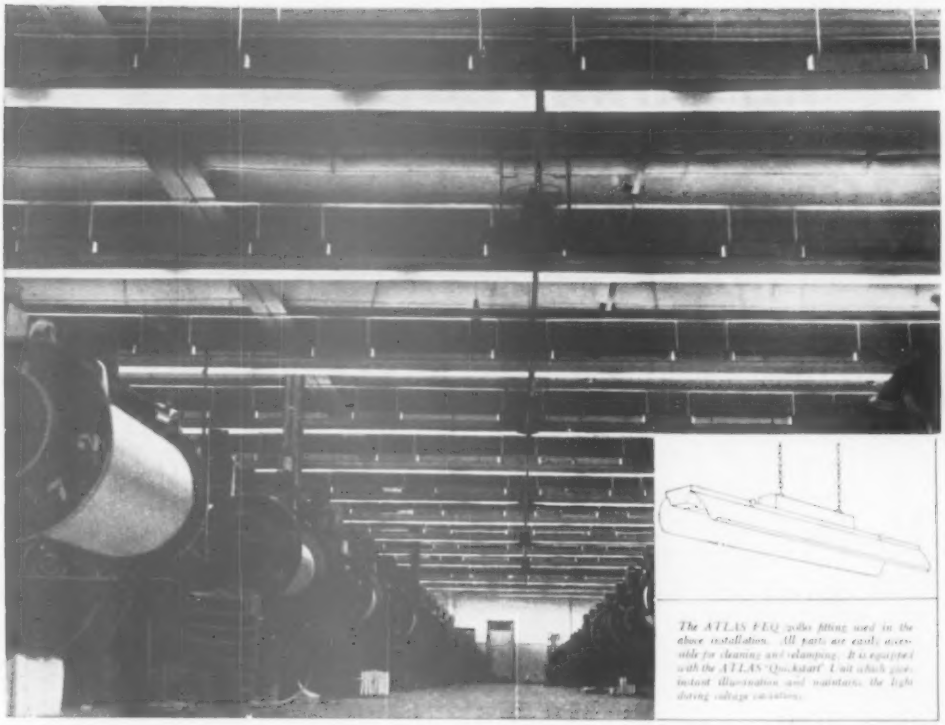

The ATLAS FEQ 2080 fitting used in the above installation. All parts are easily accessible for cleaning and changing. It is equipped with the ATLAS 'Quickstart' Unit which guaranteed illumination and maintains the light during voltage variations.

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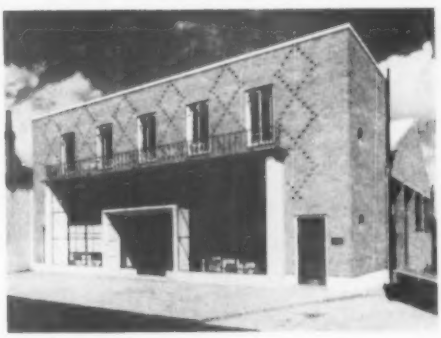

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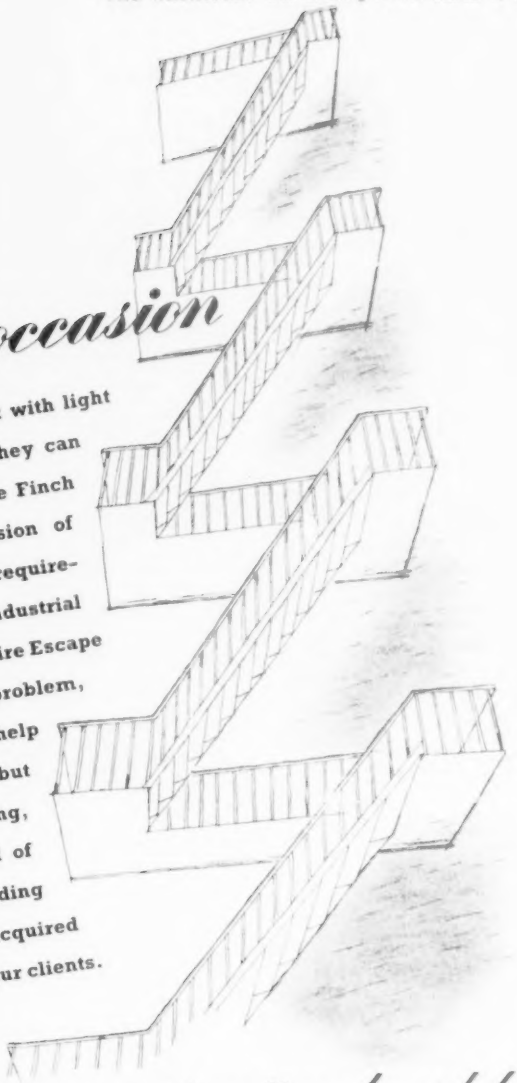

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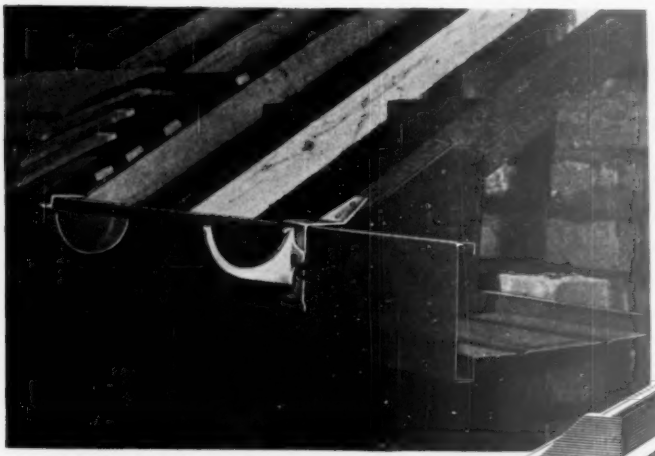

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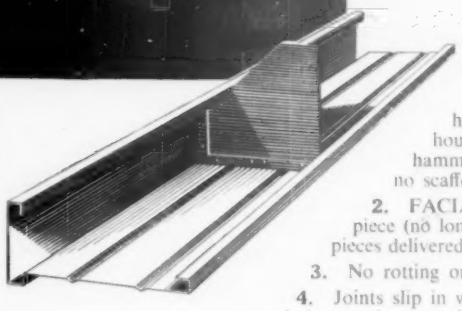

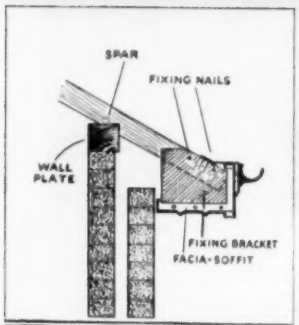

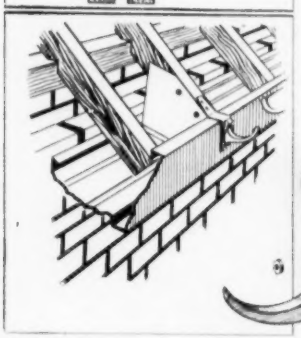

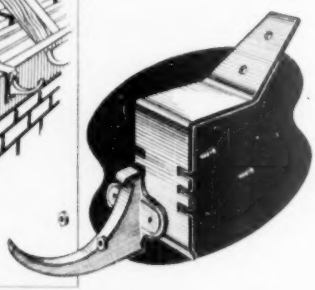

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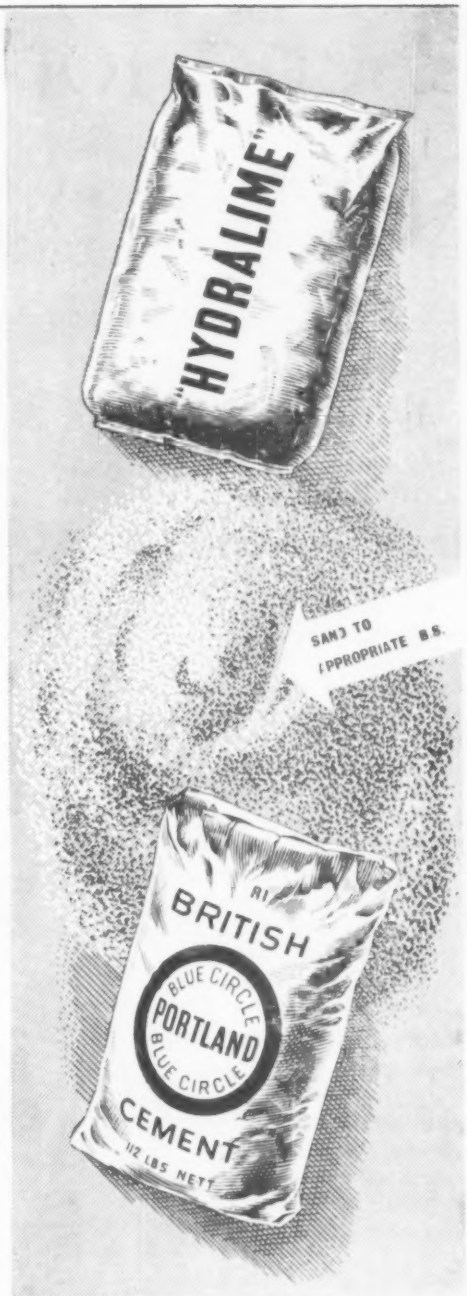

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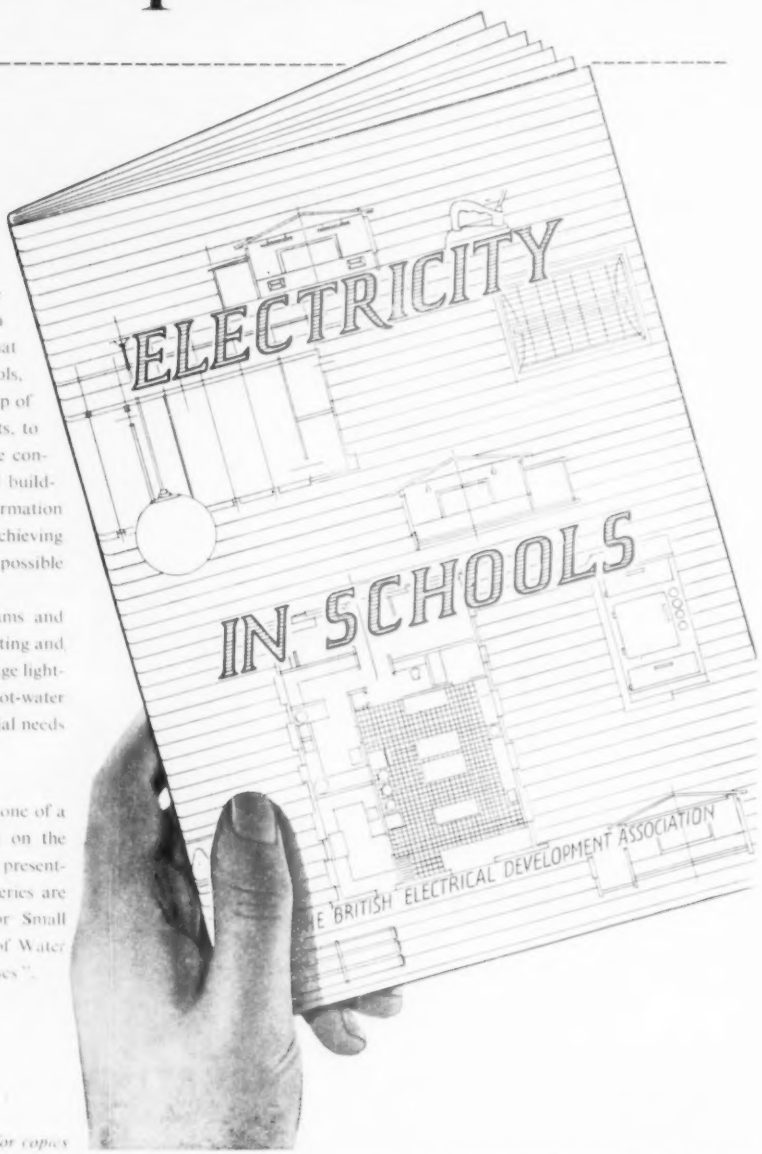

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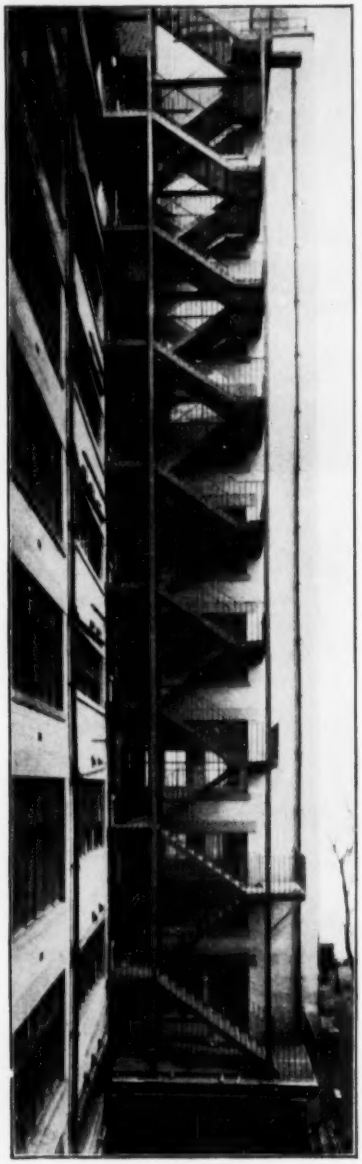

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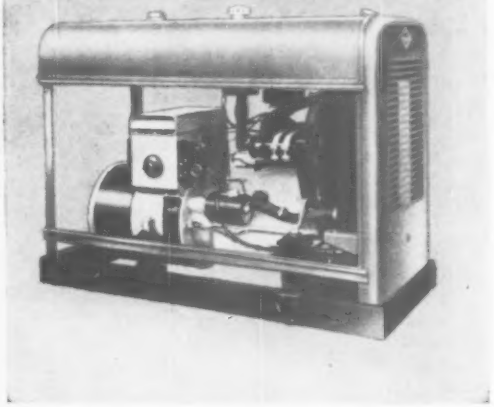

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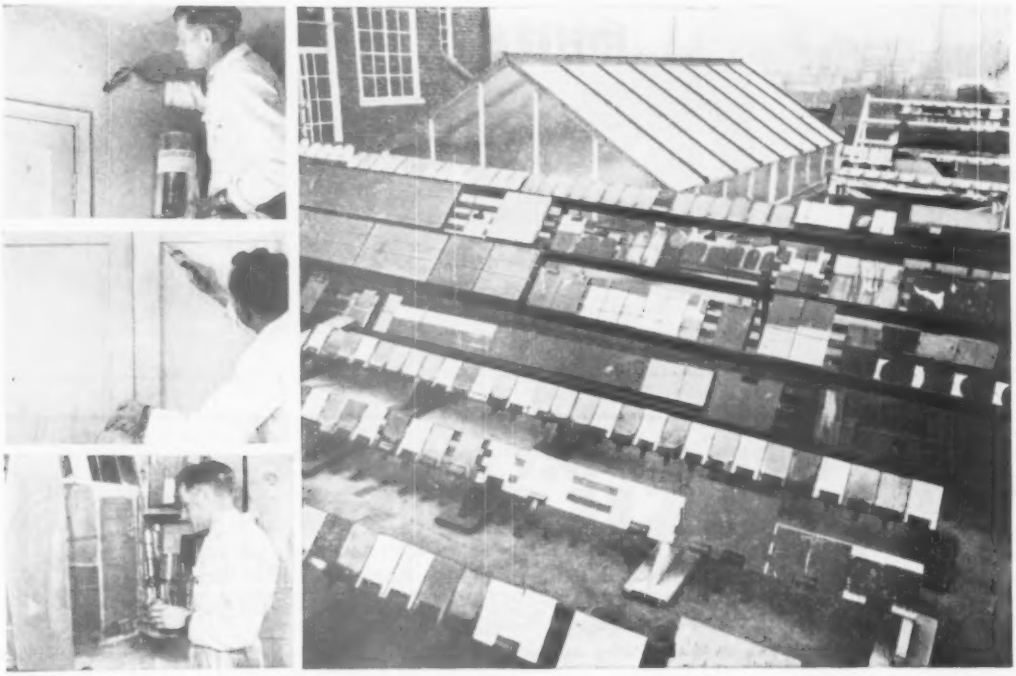

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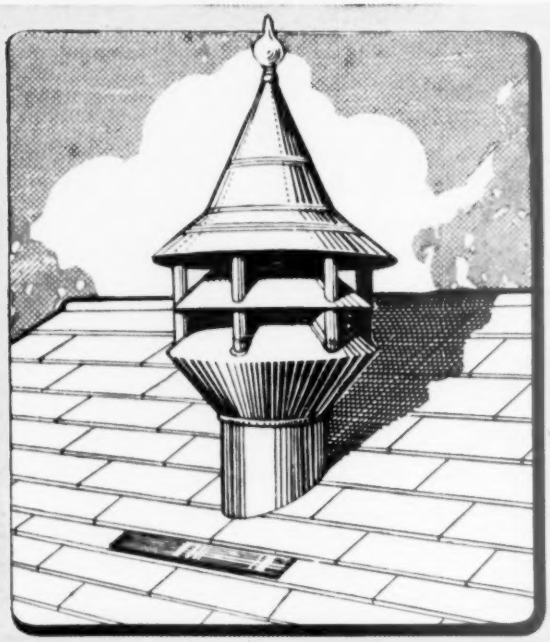

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Vol. 197 No. 4237

THE ARCHITECT & BUILDING NEWS

March 3, 1950

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HOUSING—THE NEXT MOVE

TWO days before the recent general election the Liberal Party's Committee on Housing issued its Report. It was too late to be an asset or a liability to any political camp and, of course, was little noticed, owing to the impact of election news.

Being the sort of technical-news-paper that we are, we have refrained from the definite utterances and often biased utterances in which the more politically-minded dailies and weeklies summarise situations. We cannot, however, at this stage, now that the battle-cries have died down, avoid some reference to what is a serious attempt to investigate the housing position and to find remedies for its shortcomings.

Two points stand out and, apart from matters concerning the details of methods or applications, are worthy of consideration.

The idea of appointing a separate minister of housing, at cabinet level, whose exclusive duties would be to solve the housing problem maybe an active criticism of the present tripartite housing administration of the Ministries of Health-Works-Town and Country Planning; or it may be merely a reversion to war-time and to more dictatorial methods. It is, however, time that more people realised that ministers are not enough—that expert ones are rare—and that they only last for a small part of the time of the permanent staffs of the departments which they lead and which, with each new minister, have to be established. It is again, an assumption, *prima facie*, that increase and sub-division of central government departmental functions leads to greater effect and efficiency. It *may* lead to more pigeon-holes, a larger number of forms and to antagonism in other departments which may themselves be only partially interested.

The present system is unsatisfactory enough, not because it asks for greater sectionalisation and more over-riding controls, but because it fails frequently in inter-departmental co-ordination and consultation on all relevant levels. The other outstanding point of the Liberal Report suggests that all the people who are on waiting lists for houses should be invited to join in a referendum to discover whether a short-term or a long-term (the present) system of planning is preferred and really wanted. If the former, then there should be a great drive to supply any and every type of accommodation temporary or semi-permanent, as well as permanent, to wipe out the needs within five years. In the meantime, prepare for the longer-term plans and get on with them as soon as the five-year plan is completed. To carry out this programme the Report would curtail all other types of building that could, in any way, be called non-essential.

The idea has a lot to be said for it; a new survey of the needs, a new evaluation of the New Towns, and a new policy regarding intensive developments, temporary flat schemes and many other things, would be called for and would not be amiss. The outcome of many quibbles on the merits of houses—versus flats versus hostels and the rest—would be, perhaps, resolved. A complete census of the use of existing buildings and of present over-crowding would be required and these things seem logical points to start from; in other words, waiting lists are not enough.

The one thing, and it forms the real hard core of the housing problem, that this scheme does not solve, is how to deal with exising obsolescent housing throughout the country. It is probable that nearly fifty per cent. of dwellings are now well below

reasonable modern hygienic and cultural levels. No short-term policy can solve this problem; in fact, the more "hand-to-mouth" the policy, the longer are these obsolescent conditions likely to be prolonged. Yet any alternative solutions seem to indicate that some 20 to 30 years must be allowed to clear up this legacy; by which time it is probable that a similar one will be in existence. This is not just pessimism, it is an attempt to face the facts; that any report or any programme has yet done so, at all fully, we doubt.

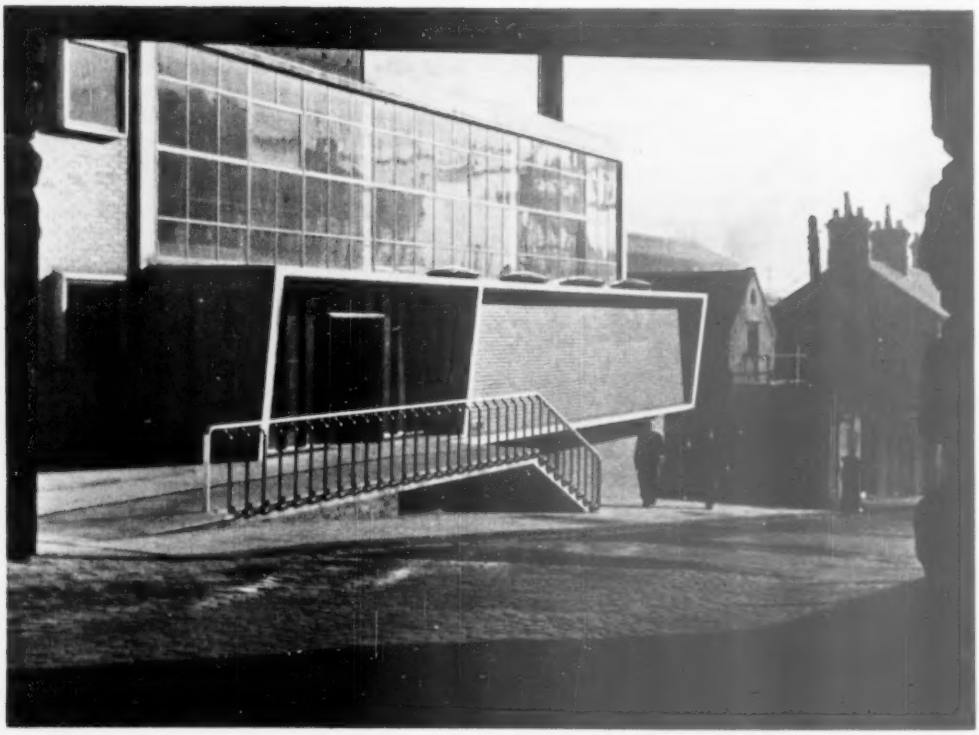
* * *

IT was just a year ago that we called attention to the activities of the Admiralty at and around the historic castle of Hurstmonceux, the new home of the "Greenwich" Observatory. Now, an independant consulting architect* has been appointed; some two years in all after the operation of moving the observatory was started.

We welcome this change of heart and hope that we shall soon see, publicly presented, the intentions that may make or mar this important monument and this very quiet and typical mid-Sussex scene.

What has not been announced is the fate of the buildings at Greenwich; Wren's original observatory, the product of the scientist-cum-architect. In its unmutilated condition, without its later utilitarian, Victorian and other accretions, it was an interesting piece of architecture. Even if it is held to be impossible to restore Wren's building as an astronomical museum (with a planetarium attached?), it would be nice to know just what is to be done with the old observatory which occupies so important a site and is so closely associated with the annals of British science. Perhaps if we wait another year there will be another announcement from the silent service.

* Mr. Brian O'Rorke, A.R.A.



Main entrance new administrative offices for Swan Hunter & Wigham Richardson Ltd., Wallsend-on-Tyne. The architects are Richard Sheppard and Partners, F.A.R.I.B.A.

CONSERVATIVE

LABOUR

This fountain in the grounds of the Palace at Laeken near Brussels is surmounted by a copy of a statue of Neptune by Giovanni at Bologna. Designed perhaps for a warmer climate it has to be protected from the frost in winter. The right hand picture, which might well do for a design for the tomb of a Soviet leader, shows the fountain in its winter overcoat of thatch. There are in this country several statues which would benefit from this treatment all the year round.

EVENTS AND COMMENTS

THE ELECTION

WHAT a night and a day it was. The exultation of Labour fans and the depression of Conservatives at their respective height and depth overnight giving way to hope and mounting excitement for the Conservatives and deep concern for Labour, put a considerable strain on both sides. The thrills of the race on Friday must have done considerable damage to the nation's output of work, but no one seemed to care. The results make it impossible to predict anything with certainty and in the excitement of the struggle most people overlooked the fact that we shall have a weak Government at a time when the international situation seems to be boiling up. Whatever happens, it is reasonable to suppose that there will be another election soon and few changes in building policy meanwhile.

SIR THOMAS BENNETT

THE A.A. ran true to form last week when Sir Thomas Bennett spoke on the Architect's Brief. The attendance was small and consisted mainly of the getting-on-for middle-aged. Anything even vaguely connected with the efficiency of the architectural profession seems to receive scant attention from younger A.A. members and students. Whether or not you are an admirer of Sir Thomas Bennett's buildings, there can be no doubt whatever that he is a most experienced architect and an excellent speaker. He has been private architect, Civil Servant and official architect, and has earned distinction in each category. He therefore speaks with great authority. This unwillingness on the part of the members of the A.A. to hear the other side of the story seems to me to be a great weakness of this otherwise admirable organisation which justly prides itself on running the only School of Architecture in the world governed exclusively by architects.

IDEAL HOMES

HOPING like anything for the return of a Conservative Government, the *Daily Mail* has planned to have a village of houses for the ordinary owner-occupier at Olympia. The "Village of Ideal Homes," on the principle that one rose does make a summer, is described as being for the first time an Empire Village because it is to include a house brought from New Zealand. This New Zealand house is single-storey and of timber construction, and is said to be "exactly like thousands which are being built in the Dominion by private firms for the Government, which lets them." I quote this extract from the press notice as it has some bearing on a letter from a New Zealand reader published on another page. The letter describes the housing shortage in New Zealand and warns intending emigrants by suggesting that not one of the 17,791 state rental houses built between 1943 and 1949 has so far been allocated to incoming British settlers.

CONDENSATION

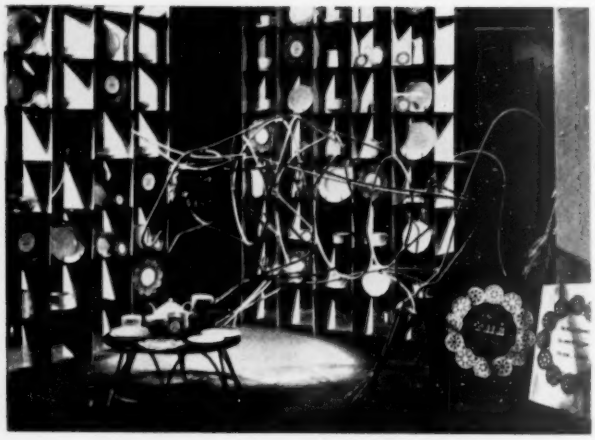
MOST people have condensation trouble, at least in their bathrooms and kitchens, but it is not always an unbearable nuisance. I hear, however, that in Halifax condensation in Corporation temporary houses is causing considerable concern. I have no precise particulars but it is said that medical reports on the results of condensation are so alarming that the Corporation is moving people with children into other accommodation. The trouble can, it appears, be cured by asbestos spraying, but at a cost of £45 per house.

WALLPAPERS

WALKING through the spacious halls of one of the well-known wallpaper manufacturers the other day, my attention was drawn to the types of paper which the many customers there were choosing. Without exception they were of the embossed cold porridge variety. Many of the people concerned were expensively if not tastefully dressed. This particular firm manufactures a wide range of excellently designed papers, but it is small wonder that they cling to the old patterns when "public demand" for them is so great.

HOME DESIGN CENTRE PROPOSED

THE twelfth annual report of the Housing Centre states that the Centre has been approached by the Council of Industrial Design, who are considering the promotion of a Home Design Centre to encourage good



One half of the window display for Lawleys Ltd. which brought first prize to the Royal College of Art team in the Regent Street Window Dressing Competition. The tail of the recumbent bull is confusingly visible on the right of the picture.

design in all articles used in the home. It would incorporate eventually a library, exhibition space and an information service for both manufacturers and consumers. The C.I.D. considers that the linking of the idea with the Housing Centre would be appropriate. Such a development would, of course, involve considerable change in the present aims of the Housing Centre, whose General Committee is now considering the proposal. It seems to me that a case could easily be made for an organisation which combined the services of the Building Centre, the Housing Centre and the proposed Home Design Centre, but perhaps this has already been considered by the people concerned.

INDUSTRIAL DESIGN, YES SIR

YOU have perhaps come across the type of front door warning device which goes ping-pong when the button is pressed; if so, you may be interested to know that someone has designed a thing which looks exactly like a very ugly knocker but which is really an operating device for a ping-pong door bell and can be had in either antique brass or chromium. Now, the postman always chimes twice.

In rather the same category of woolly thinking is a solid fuel closable stove which I saw recently. One of the advantages claimed for it was that the usual eight little mica windows in the front of it could not get broken because the designer had been ingenious enough to replace them with solid blackened cast iron to retain the illusion that they were still windows.

FESTIVAL PUBLICITY

A VERY small paragraph in *The Times* last week stated that on his return after nearly four weeks in the United States, Sir Leigh Ashton, Director of the V. and A., said that he had failed to find one person who had heard of the 1951 Festival of Britain. He added that Americans had heard of the Edinburgh Festival, which seems reasonable since quite a number have already attended it.

On the face of it Sir Leigh Ashton's statement is pretty staggering, for one would expect that the sort of people he would be likely to meet would know all about it. I imagine that the C.O.I. is responsible for overseas publicity for the Festival, but perhaps it has been muzzled for fear of criticism of the expenditure. Whichever way one looks at it the forecasts of the teeming masses of Americans bringing their millions of dollars to offset the cost of the Festival (an argument frequently used in defence of the project) seems as yet to be founded on hope rather than certainty. Or perhaps Sir Leigh Ashton was unlucky.

REGENT STREET COMPETITION

THE bulls in the china shop were a clever idea and were most beautifully made. I liked particularly the recumbent one supporting a table top on its feet. It was an extremely awkward window to dress and, I thought, fully deserved first prize. The standard of the remainder was quite high, although there were no other outstanding ideas. I suspect that the students have discovered that there is more in draping materials than they thought, and I must say that the competition made me realise how good some professional window dressing is. There was considerable public interest in the competition and I hope that the idea will be copied elsewhere.

LONDON TRANSPORT NEWS

A NEW design of coach for the District lines is being introduced; this is the first change for eleven years. The new cars will begin to appear in service in May. They have larger windows, better heating and ventilation, and fluorescent lighting.

A new bus stop sign is also being introduced. This is on much the same lines as previous ones, and has a precast concrete post with an aluminium finial. The actual sign has been given an aerofoil section and the post incorporates a frame for information. I wonder why the frames on existing posts never contain information about the routes of the buses which pass that way?

Chair designed by Mr. Finn Juhl which is one of the pieces of furniture forming part of the Danish exhibition at the R.I.B.A., which remains open until March 29.

IDEA FOR HOUSING AUTHORITIES

THE Holborn Borough Council, worried at the slowness with which it is able to provide new accommodation for its waiting list of more than a thousand families, has issued a pamphlet setting out the reasons for the delay. This pamphlet explains the long rigmarole, so familiar to architects, which must be gone through before state-aided houses or flats can be begun. It is an excellent idea to give this information to the public and it might well be copied by other authorities. Whether it will do much to improve the temper of those on the waiting list is another matter, for when seen in black and white, the reasons for delays are unlikely to be appreciated by those not professionally concerned with building. For example, the statement that before a block of flats can be constructed "it is necessary for the Council to approach the L.C.C. and the Ministry of Health certainly four and possibly six times for approvals and consents," though a statement of fact, must provoke the immediate question, Why? And although there is probably a valid answer, it does make one wonder whether everything possible has been done to simplify the process.

DANISH ARCHITECTURE TO-DAY

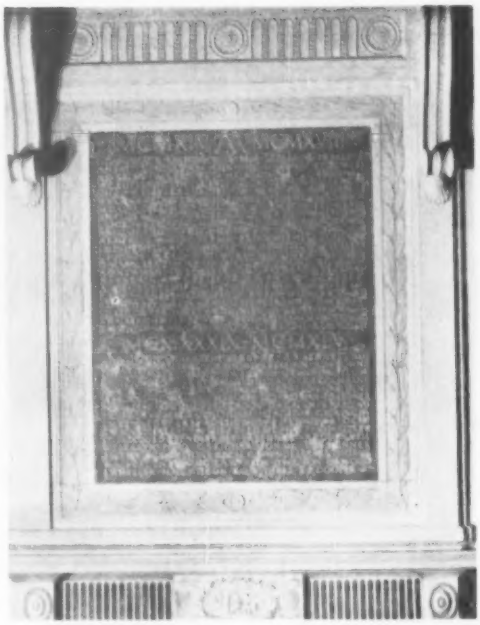
SEVERAL hundred members and guests attended the opening, by H.E. the Danish Ambassador, of the exhibition of Danish Architecture To-day at the R.I.B.A. I do not suppose that more than a quarter of them heard a single word of the proceedings. The long, narrow members' room into which the audience was packed (the majority standing) is not really suitable for speech-making anyway, but a loudspeaker would have helped. The President welcomed the Ambassador and H.H. Prince Georg, who is attached to the Embassy in an official capacity. The Ambassador, in a charming speech, declared the exhibition open. Arkitekt Erling Langkilde, President of the Danish A.A., spoke in excellent English on the subject of contemporary architecture, stressing the point that too much attention was being paid by architects to research, which had become the "rudder" of the ship of architecture. This went down well with Mr. Fitzmaurice and Dr. Bonnell, both of whom were in one of the front rows. Arkitekt Ole Hagen, one of the organisers of the exhibition, thanked the R.I.B.A. for offering accommodation for the exhibition, and its staff and members for helping with the arrangements. The proceedings ended with a characteristically polished speech of thanks to the visitors by Mr. Goodhart-Rendel.

The exhibition itself will be dealt with next week. I had only time for a preliminary glance between and over the crowds. There are lots of good things to be seen, and do not miss the furniture. In the evening the President and officers of the R.I.B.A. and the exhibition sub-committee entertained the Danish Ambassador, H.H. Prince Georg and the architects at a small cocktail party.

ABNER

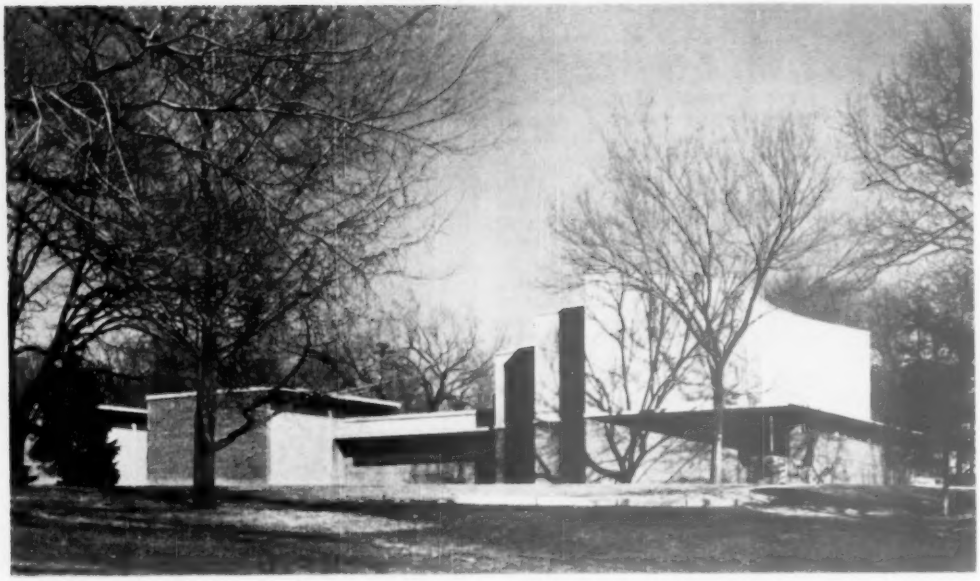
* * *

The wallpaper manufacturers' Golden Jubilee Exhibition Train designed by Kenneth Cheesman, A.R.C.A., L.R.I.B.A., is now touring the most important centres outside London. The tour commenced at Manchester on November 28, 1949 and the train was recently at Brighton. It is due at Northampton on March 6, where it will stay one week before going to Leicester on March 13. The interior schemes were designed by John Lawrence. A decorative display of complementary wallpapers designed for use together is shown in the view illustrated.



A Memorial Tablet recording the names of 159 members, students and staff of the Architectural Association, who died on national service in the two World Wars, was dedicated at noon on Tuesday, February 28, by the Dean of St. Paul's in the library of the Association.

The new tablet, executed by E. J. & A. T. Bradford Ltd., replaces one which commemorates the names of the 96 members who died in the 1914-1918 war.



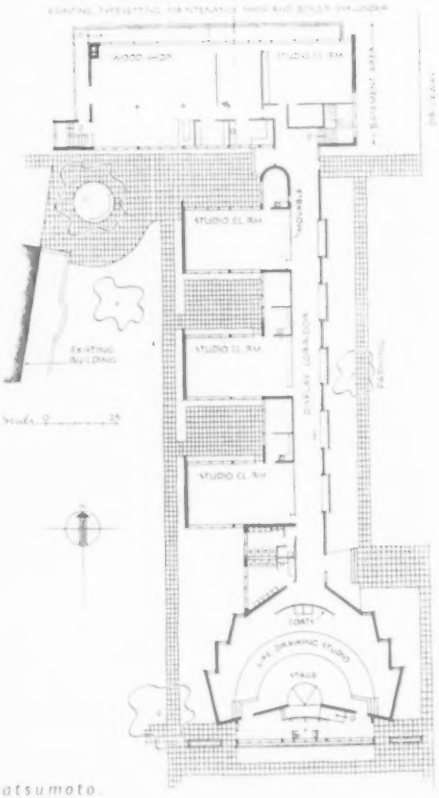
View from S.W.

KANSAS CITY ART INSTITUTE

THE Art Institute has been built on a long, level site on a north-south axis near existing buildings of the Institute. A north-south orientation has been gained by aligning the building along the main axis with the large studio for life-drawing at the south end and individual classrooms projecting out to the west of the long display corridor. The two-storey unit at the north end has industrial-design classrooms on the upper floor and rooms for painting, typesetting and service downstairs.

The plan is a pavilion-type scheme with various design and structural devices to provide optimum north light despite site limitations. Shape, position and structural enclosure of the two major instruction units (the individual studio-classroom and life drawing studio accommodating 150 students) have been worked out to give best possible light conditions. Beneath the windows are ventilating louvres on the exterior and in-opening panels to admit fresh air on the interior. A high clerestory on the south provides cross ventilating. End or western walls of the room are windowless and to provide good north light the architects developed a room that steps out in plan and upwards in section. Artificial light is by continuous ceiling channels in both downlighting (cold cathode) and cove troughs (incandescent or fluorescent).

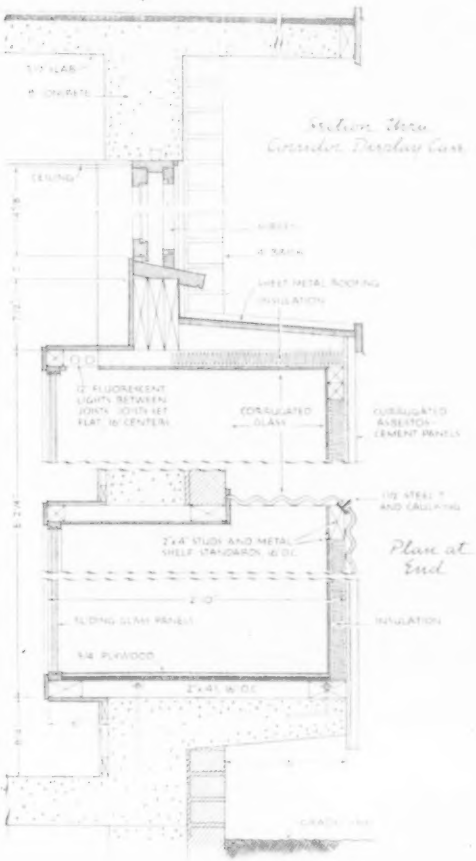
The building is of concrete frame, with brick and light-weight concrete-block filler walls. The exterior surface of the upper portion of the large studio and some "trim" is limestone, harmonising with existing buildings. Heating is by a split system of radiant floor slabs and warm air via grilles from floor tunnels.



Architects: Runnells, Clark, Waugh, and Matsumoto.

Exterior of North-South Corridor.

Kansas City Art Institute: The large Studio.



Display corridor with projecting display cases (on the right in photo).

NEWS OF THE WEEK

The I.A.A.S. Annual Dinner

The Incorporated Association of Architects and Surveyors held their 24th annual anniversary dinner and dance at the Mayfair Hotel, London, on Friday last, February 24. The President of the Association, Mr. Charles H. Taylor, presided and proposed the toast "The King." Mr. John Gloag, Hon. A.R.I.B.A., proposed the toast "The Building Industry" and was replied to by Mr. Dudley Cox, Vice-President of the London Master Builders Association. "Our Guests" was proposed by Mr. Charles W. Glover, immediate Past-President of the Institute. Mr. Sydney Tatchell, C.B.E., F.R.I.B.A., in the absence of Sir Richard Livingstone, President of Corpus Christi College, Oxford, replied. Mr. Ashe Lincoln, K.C., proposed the toast "The I.A.A.S." and was replied to by the President. Included among the guests were the following: The Norwegian Ambassador, H.E.M. Per Preben Prebensen; The High Commissioner for Eire, Mr. John W. Dulanty, C.B., C.B.E.; The Deputy High Commissioner for Australia, Mr. E. McCarthy; Sir Patrick Abercrombie, M.T.P.I., F.R.I.B.A.; Mr. Anthony Mealand, F.R.I.B.A., M.T.P.I., Planning Officer to the City of London; Mr. W. H. Scanlan, President of the Institute of Registered Architects; Mr. Vincent Burr, Chairman of the Admission Committee, A.R.C.U.K.

Building Bulletin No. 2

The first Bulletin published by H.M.S.O. for the Ministry of Education in November 1949 made suggestions on how to reduce the costs of building primary schools. Building Bulletin No. 2 (H.M.S.O. price 2s.) which came out on Wednesday, is concerned with new Secondary Schools which have to be built to the Minister's requirement that schools starting in 1951 must not cost more than £240 per place as against £320 in 1949. The bulletin will be discussed more fully later, but its importance cannot be overestimated in view of the complete reassessment of school design necessitated by the cuts. All architects and students who are interested in school design are advised to get a copy.

2-bedroom houses

Doncaster Town Council has decided to increase the proportion of two-bedroom houses in its housing programme from 5 per cent. as at present, to 30 per cent., as more than half the married couples on its waiting list of 4,500 are without children. The cost of two-bedroom houses is estimated at £1,019 as against £1,150 for the three-bedroom type.

New County Buildings

In May, 1947, Fife County Council organized an open competition amongst Scottish architects for extensions to the County Offices at Cupar-Fife. The winner was Mr. John Needham, Dundee.

Approval has been received for a commencement to be made on the first section which will provide 19,500 square feet of office space. The cost of the extension is £40,000, the total cost of the completed building is estimated at £232,221.

APPOINTMENTS

Mr. W. C. Brown, Dip.Arch., A.R.I.B.A., Dip.T.P., A.M.T.P.I., has been promoted from Deputy City Architect to City Architect of Bradford in succession to Mr J. T. Castle who recently left to take up his appointment as Architect to the Berkshire County Council.

Mr. F. W. Grieg, County Surveyor Kent, is to retire this month. He will be succeeded by the present Deputy County Surveyor, Mr. E. W. H. Vallis, L.R.I.B.A., M.I.Mun.E., F.R.I.C.S., at a salary of £1,800 per annum.

ARCHITECTS' WILL

Mr. A. H. M. Aldridge, registered architect, of Bournemouth, left £54,989.

COMING EVENTS

R.S.A.

● March 6, at 8 p.m. "Public Lighting." Speaker: J. M. Waldram.

Institute of Fuel

● March 7, at 5.30 p.m. At the Institute of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1. "District Heating in the New Towns." Speaker: A. E. Margolis.

R.I.B.A.

● March 7, at 6 p.m. "1951 Exhibition." Speaker: Hugh Casson.

L.M.B.A.

● March 8, at 1 p.m. At Derry & Toms Restaurant, Kensington High Street, W.8. Central Area No 1. Luncheon and 85th Area General Meeting.

I.A.A.S.

● March 8, at 6 p.m. At Caxton Hall, Westminster, S.W.1. A Debate "That in the Opinion of this Meeting the Continued Requisitioning of Buildings is Against the Public Interest." Speakers: Bryan W. Anstey and J. S. Ratcliffe.

T. & C.P.A.

● March 8, at 6.15 p.m. "Land Hunger in Britain—The Claim for Living Space." Speaker: F. J. Osborn.

Victoria and Albert Museum

● March 8, at 6.15 p.m. "Early English Water Colours." Speaker: Graham Reynolds.

Mr. P. H. Parkin, B.Sc., A.M.I.E.E., of the B.R.S. is giving a paper on sound transmission in buildings, at the R.I.B.A., on March 16, at 5.45 (tea 5 p.m.). There will be demonstrations of different levels of insulation operated by the B.R.S. Mobile Acoustics Laboratory.

Winston Walker, F.R.I.B.A., A.A.Dipl., has relinquished his post as Senior Assistant in charge of Architecture at the Hammersmith School of Building. He will continue to practice from 107 Sloane Street, S.W.1, SLO 1410. He will continue his private coaching sessions for the preparation for the Final Design Exam of the R.I.B.A. and the criticism of Testimonies, etc. Next session commences March 13.

CORRESPONDENCE

Housing of British Immigrants in New Zealand

Sir,—Much publicity has been given by the Press to the typical New Zealand State house, which will be one of the features at the forthcoming Ideal Home Exhibition at Olympia in London.

During a year's residence in New Zealand, I have made a careful study of the local housing conditions. Despite the substantial achievements both of private builders and the State Housing Department since 1945, there is still a very serious shortage of decent accommodation throughout the Dominion. It is virtually impossible at present to find either a small house or flat to let in any urban area, and in consequence, overcrowding is appalling.

The provision of homes is an important part of Government policy in New Zealand, and the standards of the State houses are generally high. As the average weekly rentals of such houses are substantially below those paid for privately owned dwellings of similar type, there is naturally very keen competition for tenancies in the State houses. An official handbook published in December, 1949, recorded that there were approximately 50,000 unsatisfied applicants for houses. Tenancies of the State houses are said to be allotted "according to the merits of each case and the date of application."

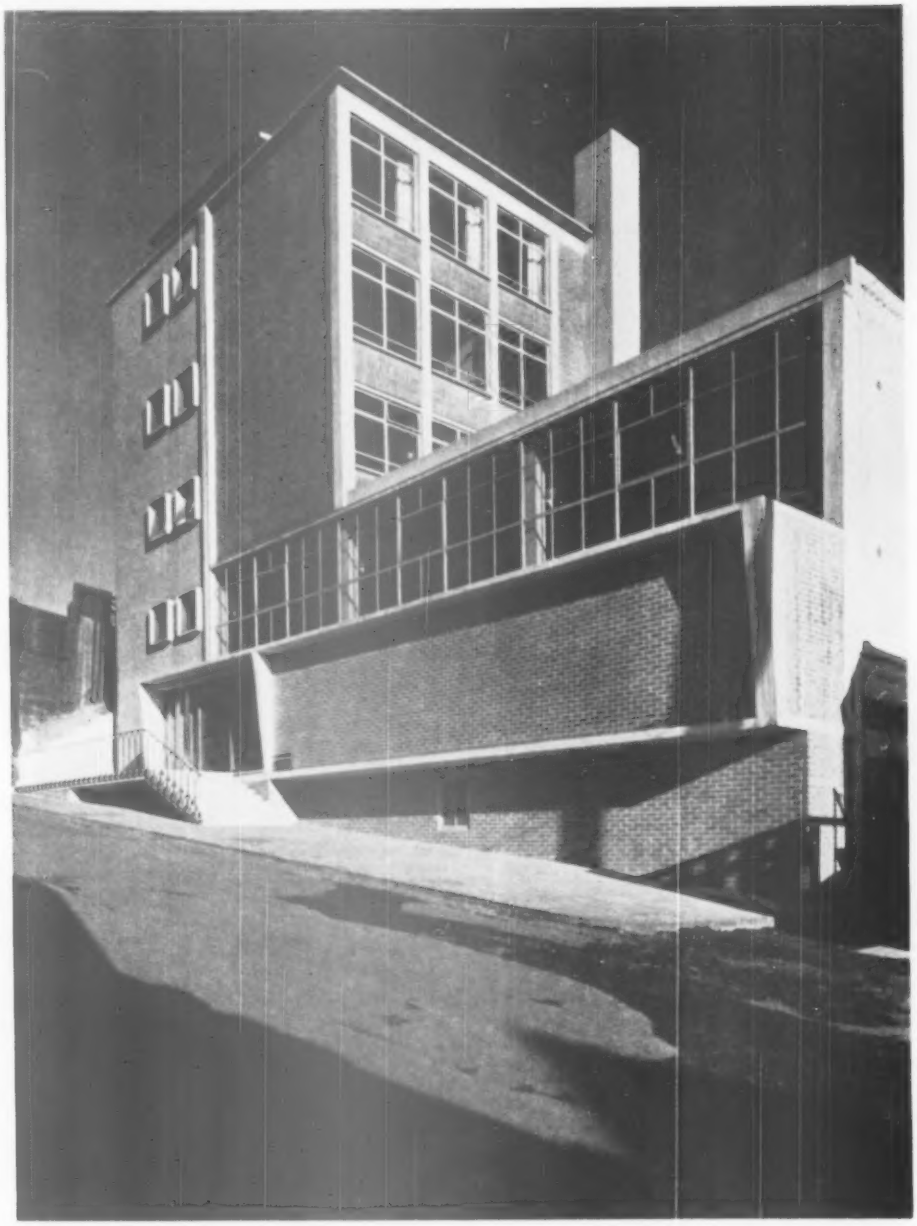
New Zealand is a land of great opportunities, but intending emigrants from Great Britain (and especially those with families) should be warned of the serious housing difficulties that will certainly confront them on their arrival in the Dominion. In this connexion it would be of service if the High Commissioner for New Zealand could state how many of the 17,791 State rental houses erected between April 1, 1943 and March 31, 1949, have been allocated to incoming British settlers. The information could be obtained by cable from the Department of Housing Construction, which is now incorporated in the Ministry of Public Works at Wellington. I suggest that the number is nil.

I am etc.,

JOHN G. MARTIN.

(formerly General Secretary of the National Housing and Town Planning Council, London).

Auckland, N.Z.

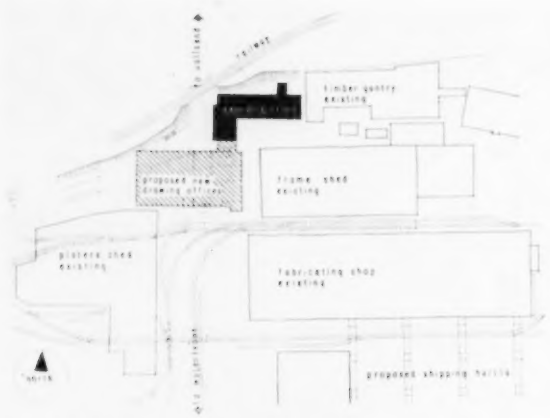


The new Offices from the west side of Station Road

SHIPBUILDERS' OFFICES, WALLSEND-ON-TYNE

ARCHITECTS: RICHARD SHEPPARD & PARTNERS, F.A.R.I.B.A.

Assistant Architects: C. E. BANTIN, A.R.I.B.A. and D. CHALLIS, A.R.I.B.A.



BLOCK PLAN (SCALE 1:1000)

THESE new administrative offices for Swan Hunter and Wigham Richardson Ltd., have recently been built as the first part of a general reorganization of their Wallsend Yard, in order to introduce the latest techniques of ship construction and to enable more efficient production generally. The whole scheme which is planned as a long term policy includes centralised administration in the new block, drawing offices, new fabricating and platers shops and resited railway communications and traffic arteries. All this must be carried out whilst maintaining the utmost production and all existing accommodation and services have to be maintained until the new ones are provided.

The new administrative offices

A view from the railway bridge

The main entrance

have been built on the only suitable site to commence building, that is, on the east side of Station Road the main access to the west yard. The vacated offices are now being occupied by time-keeping and overseers' departments whose original offices to the west of Station Road are at present being demolished to make way for the new drawing offices shortly to be erected on this site. The new drawing offices will be at high level in order to preserve the present access to the yard and will be connected to the link block of the administration offices.

All entrances to the administrative block and drawing offices are arranged to give easy and quick communications between artisan, designer and administrator.

CHARACTER OF THE SITE

The whole of the site down to the water front has a slope from north to south of 1 : 10. Reinforced concrete retaining walls have been built against the steep railway embankment forming the north boundary in order to prevent subsidence. Over Station Road a headroom of 11 ft. 8 ins. had to be maintained, dictated by the railway bridge at the north end; 11 ft. headroom was required also over the minor access road to the transformer house and gas producing plant.

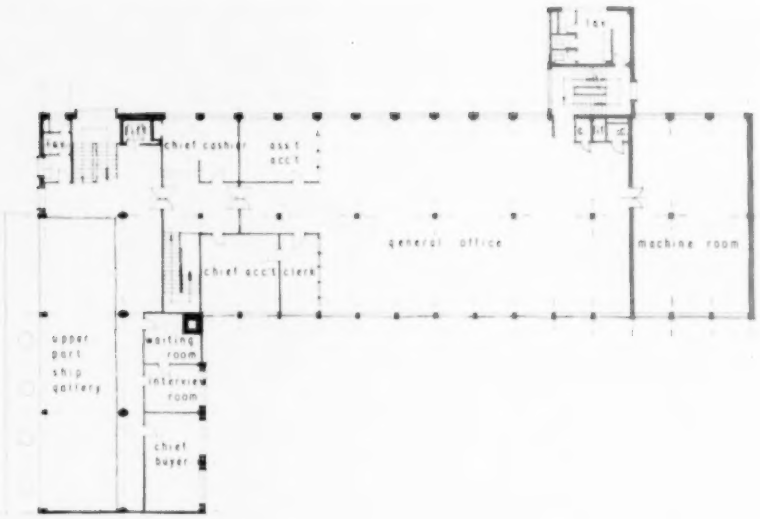
PLANNING

The administrative offices form a 5-storey block running east-west on the east side of the main approach to the yard (see block plan). The general planning of the offices, plans of which are illustrated on pages 234 and 235, is as follows: Ground floor—Yard Engineers' Department, Conference Rooms and Shop Managers' Rooms. All the occupants of these rooms require direct access to the yard which is approached along a covered way on the east side of the link block. First and second floors—General Offices, typing and accounts departments. Third floor—Senior Executive Officers. Fourth floor—Directors' Rooms and Board Room. From the windows of these rooms can be seen a fine view of the yard and Tyne and the terrace in front of the windows acts as a buffer to noise from the yard.

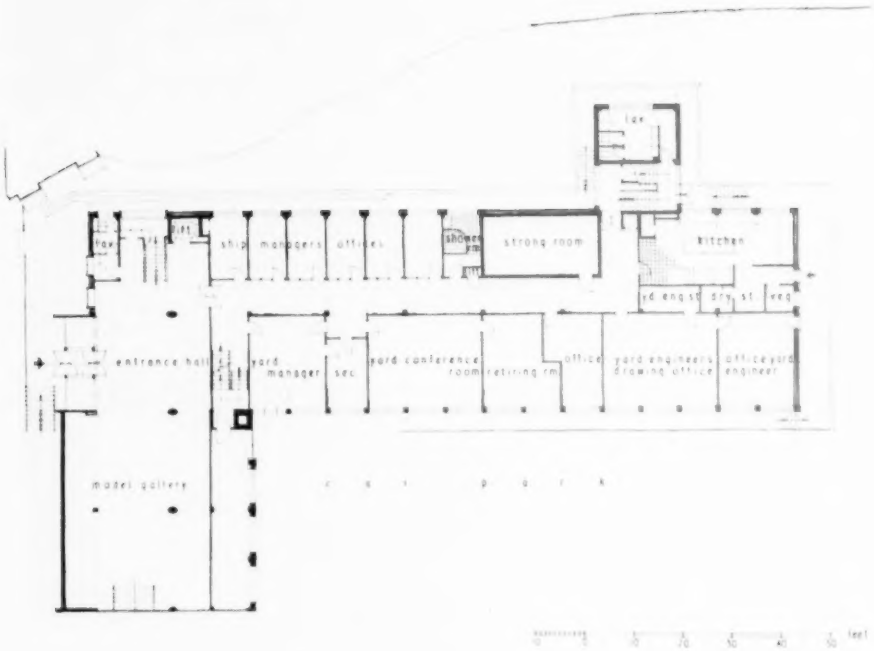
The main entrance hall and the 2-storey link block planned on its minor axis provide a display area for models of ships built by the Company. The corridor at mezzanine level on the east side of the link block will provide circulation to the future drawing offices.

NOTES ON CONSTRUCTION

Steel framework and concrete casing on in situ concrete pile foundations. Floors—4 in. in situ reinforced concrete with 3 in. screed and floor finish. Roof—4 in. in situ concrete with concealed concrete gutters, 1 in. wood wool and foamed slag screed laid to fall and asphalt finish. Walls—external, 4½ in. brick with cavity and 4½ in. foamed slag blocks internal leaf.

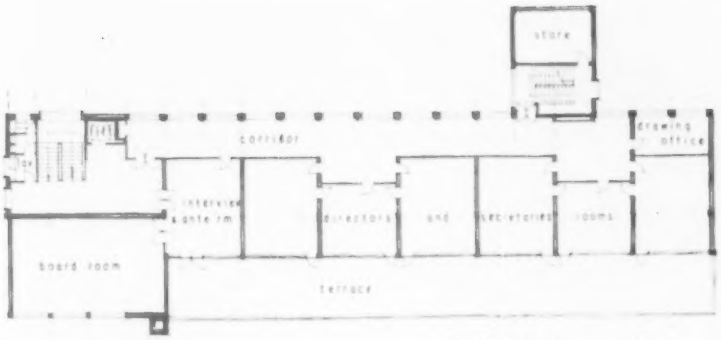


FIRST FLOOR PLAN

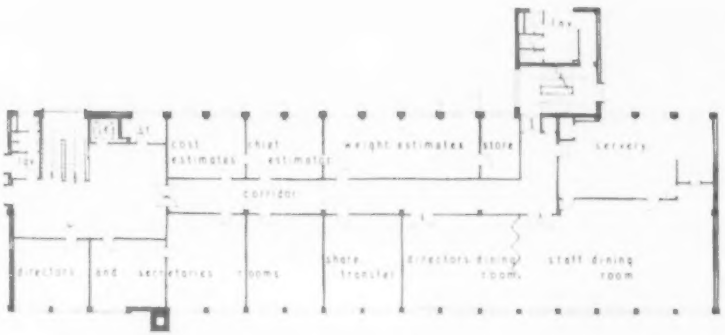


GROUND FLOOR PLAN

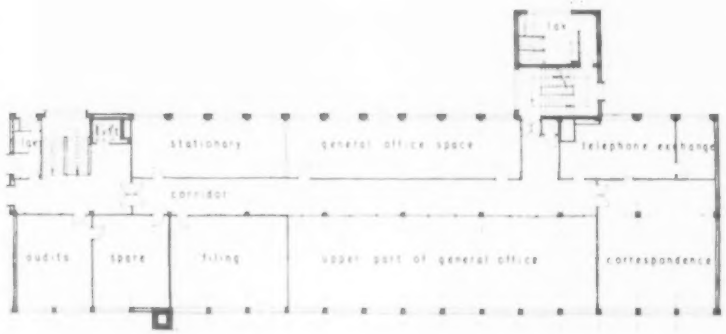
SHIPBUILDERS' OFFICES WALLSEND-ON-TYNE



FOURTH FLOOR PLAN



THIRD FLOOR PLAN



SECOND FLOOR PLAN

Internal walls 3 in. breeze for offices. Two 3 in. breeze skin with cavity between on Directors' floor, for noise reduction. Windows-purpose made metal casements.

SERVICES

Heating—embedded panel sub-floor heating with asbestos cased pipe coils embedded in floor screeds. Mains concealed in false ceilings to corridors of upper floors and in floor level duct on the ground floor. Boilers are oil-fired, fed from a tank beneath the car park. All service pipes are hidden in vertical ducts.

FINISHES

Offices: Walls and ceilings in plaster with washable distemper. Accotile floors. Softwood framed flush doors in pressed steel door frames. Skirtings and window boards in softwood. The machine room ceiling has acoustic tiles for sound absorption.

Directors' Rooms: Walls—panelled in various woods. Cork floors. Veneered solid flush doors in ebonised hardwood frames. Aluminium skirtings. Acoustic tiles in panels on the ceiling in front of the windows for sound absorption.

Board Room: Walls panelled in two woods—teak to window wall and that opposite; mottled ash on the other two walls. Cork floor and aluminium skirtings. Acoustic tiles in recessed panels on the ceiling.

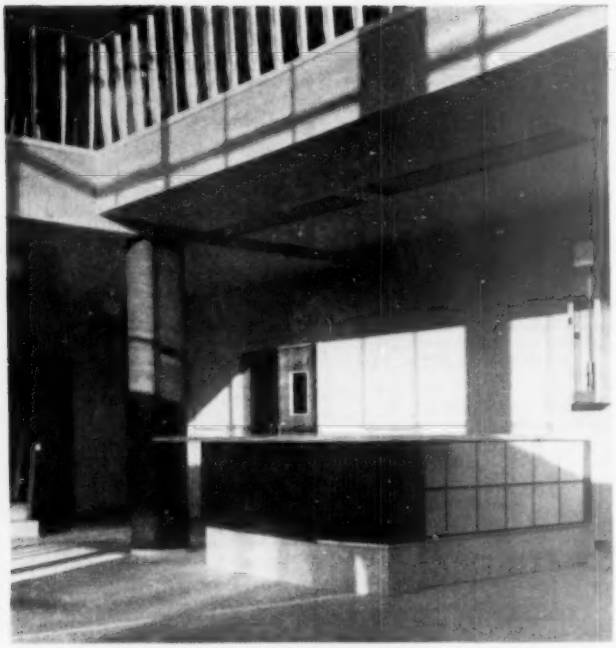
Main Staircase: Reinforced concrete carcassing with terrazzo treads and risers. Plastered and painted soffit; aluminium handrail and balustrading.

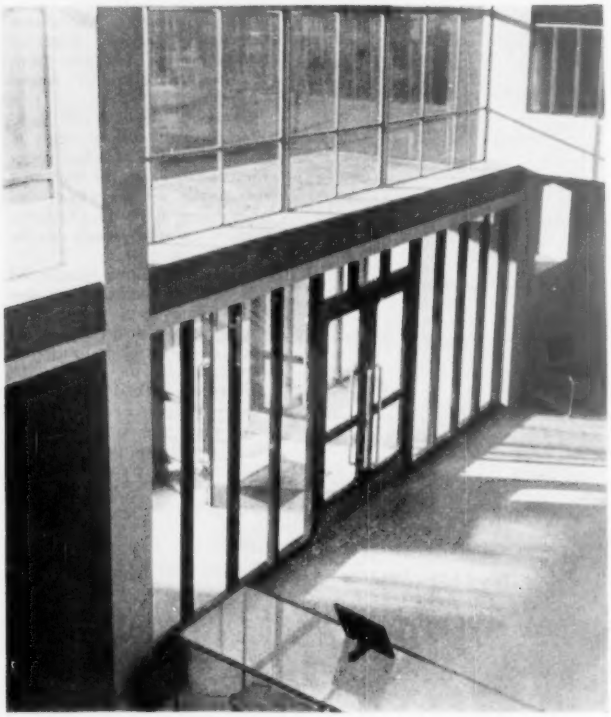
Entrance Hall and Ship Model Gallery: Teak entrance doors and screens glazed with plate and broad reeded glass. Plaster on walls and ceilings. Terrazzo floor and skirtings. Columns flat painted dark maroon, ceilings—pale blue flat paint and walls—stone coloured flat paint.

FURNITURE

The Board Room table, board room chairs, side tables, coffee tables, sideboard and the Porter's desk in the Entrance Hall were designed by the Architects and made by Messrs.

ARCHITECTS: RICHARD SHEPPARD & PARTNERS, F/A.R.I.B.A.





Top: The Porter's Desk

Bottom: The Entrance Hall doors from the gallery

Heal and Son. This firm also supplied the fabrics and other furnishings for the Board Room and Ante Room.

The Board Room table is made of teak with ash lippings and is made in two sections for easy handling. The top is finished with Niger goat skin. One long side of the table is curved so that the chairman has good vision to all seats. Board Room chairs are upholstered in blue tapestry.

The sideboard is made in teak with a Niger goat skin top and sliding ash doors. Teak strips on aluminium are used to give texture and relief to the sideboard and echo the detailing of the panelling.

The centre carpet in the Board Room is plain nigger brown; curtains are oyster satin.

The ante-room is furnished with tub easy chairs upholstered in plain brown tapestry. Coffee tables are in ash finished with a heat resisting polish. Curtains are yellow and white damask.

The Porter's desk is made of teak and has an ash plinth and ash lippings. The front face is finished in the same way as the ends of the sideboard (i.e. teak strips on aluminium) and the return face is covered with acoustic tiles. The top is finished with blue hide.

*

CONSULTANTS

T. F. Burns and Partners, M.I.C.E., Consultants for the structure.

MAIN CONTRACTORS

GENERAL CONTRACTORS for Superstructure (Administration Offices): Holland & Hannen & Cubitts Ltd.

DEMOLITION: Frank Baily & Smith Ltd. (Timber Gantry): Demolition & Construction Co. Ltd. (Time Office & Overseers' Offices)

RETAINING WALLS, PILE CAPS and GROUND BEAMS: Purdie Lumsden (Newcastle) Ltd.

SUB-CONTRACTORS for PILING: Frankie Compressed Pile Co. Ltd.

SUB-CONTRACTORS

Asphalte: Ragusa Asphalte Paving Co. Ltd. (Roofing). Neuchatel Asphalte Co. Ltd. (Tanking).

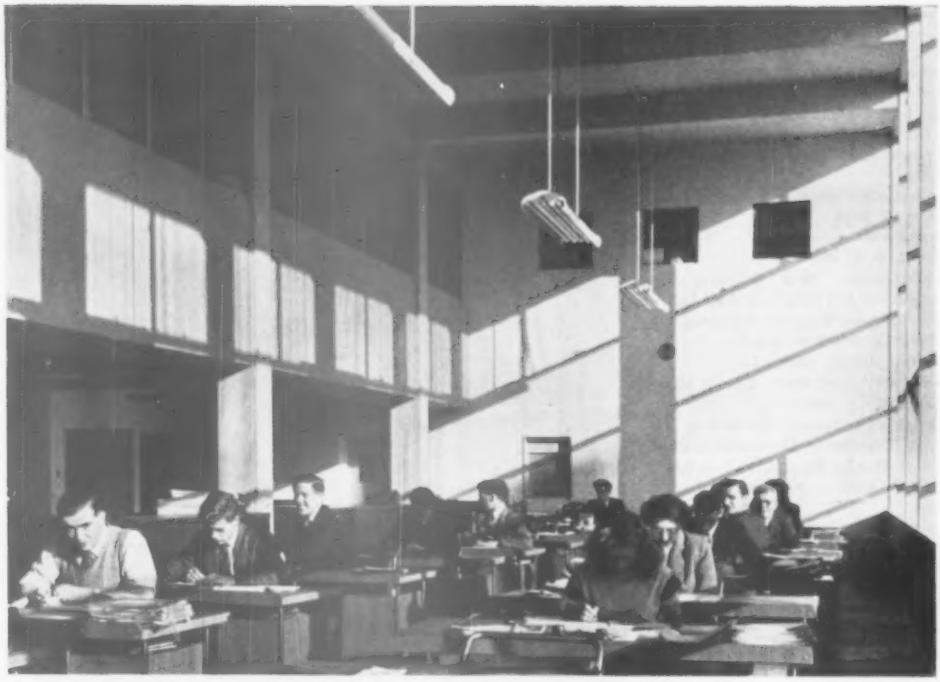
Balustrading: N. F. Ramsay & Co. Ltd.

Blinds (Sun): Avery's.

Bricks (Facing): Uxbridge Flint Brick Co. Ltd.

Clocks: Gent & Co. Ltd.

Cooking Equipment: Benham & Sons Ltd.

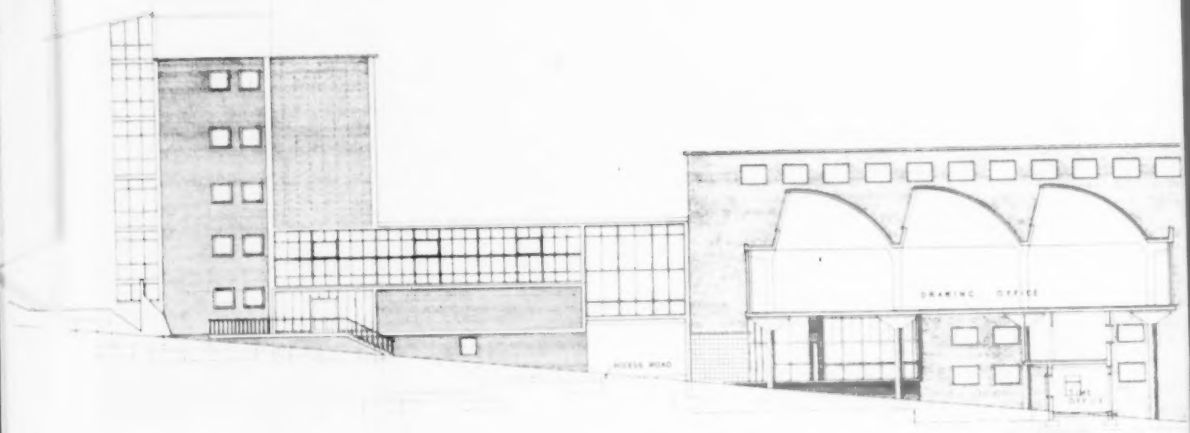


The General Office

The Board Room

Doors: D. Burkle & Son Ltd.
Door Furniture: N. F. Ramsay & Co. Ltd.
Electrical Work: F. H. Wheeler & Co. Ltd.
Flooring (Cork and Accotile): Armstrong Cork Co. Ltd.
Furniture and Furnishing: Heal & Son Ltd.
Heating: Benham & Sons Ltd.
Joinery: Swan Hunter & Wigham Richardson.
Lifts: J. & E. Hall Ltd.
Light Fittings: Bent & Lloyd Ltd. Troughton & Young (Lighting) Ltd.
Paint: Imperial Chemical Industries Ltd. Hadfields (Merton) Ltd.
Painting: Arnold Sharrocks.
Partitions (Pressed Steel): Crittall Manufacturing Co. Ltd.
Plumbing: Selbourne Engineering Co. Ltd. Engineering Devices Installation.
Sanitary Goods: Dent & Hellyer Ltd.
Shutters (Roller): Shutter Contractors Ltd.
Steelwork: Matthew T. Shaw & Co. Ltd.
Telephones: Reliance Telephone Co. Ltd., The
Terrazzo and Wall Tiling: Commercial Marble & Tile Co.
Ventilation to Kitchen: Benham & Sons Ltd.
Windows: Henry Hope & Sons Ltd.
Water Service: Engineering Services Installation.

A view from south-east across the car park

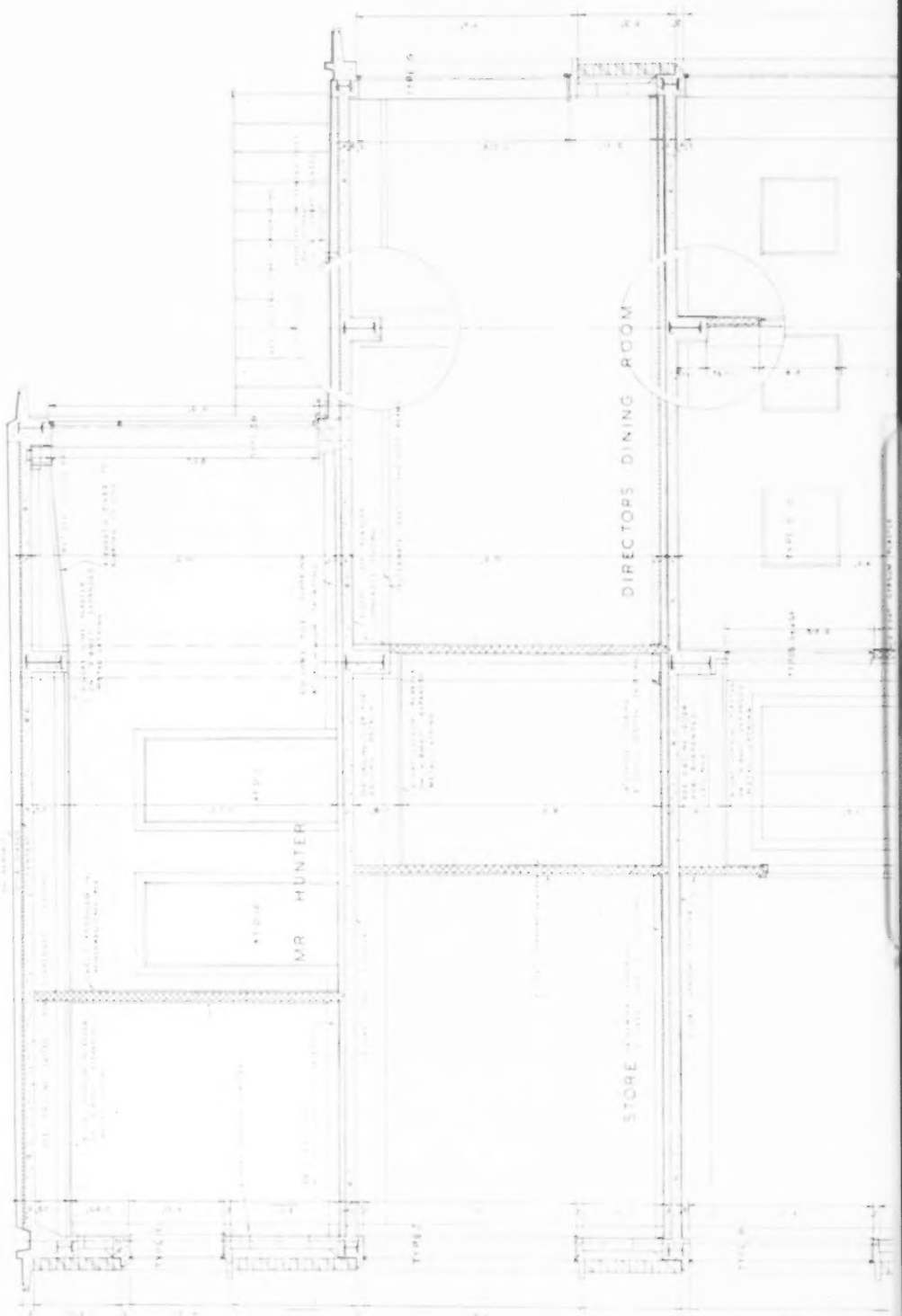


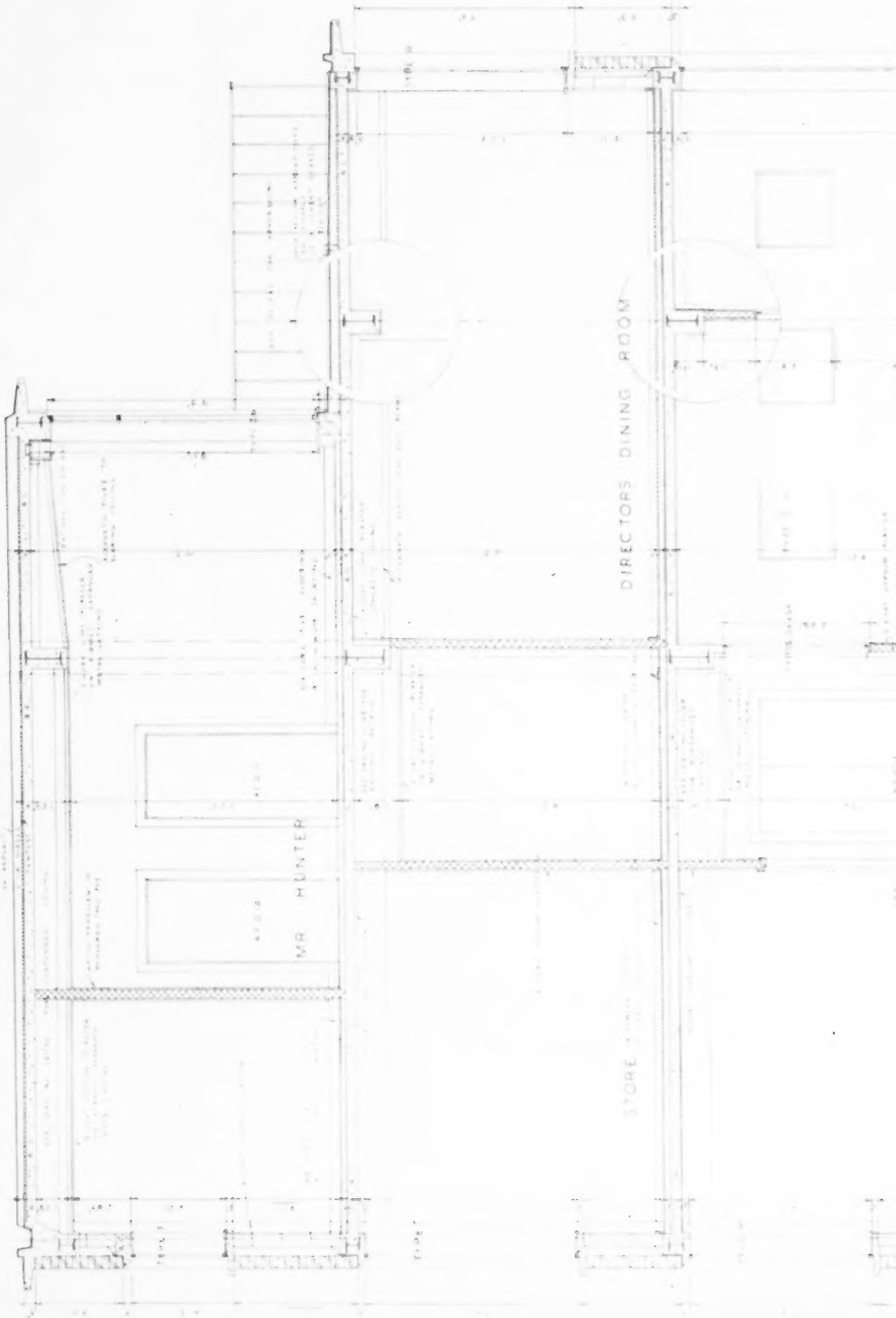
WEST ELEVATION AND SECTION THROUGH DRAWING OFFICE

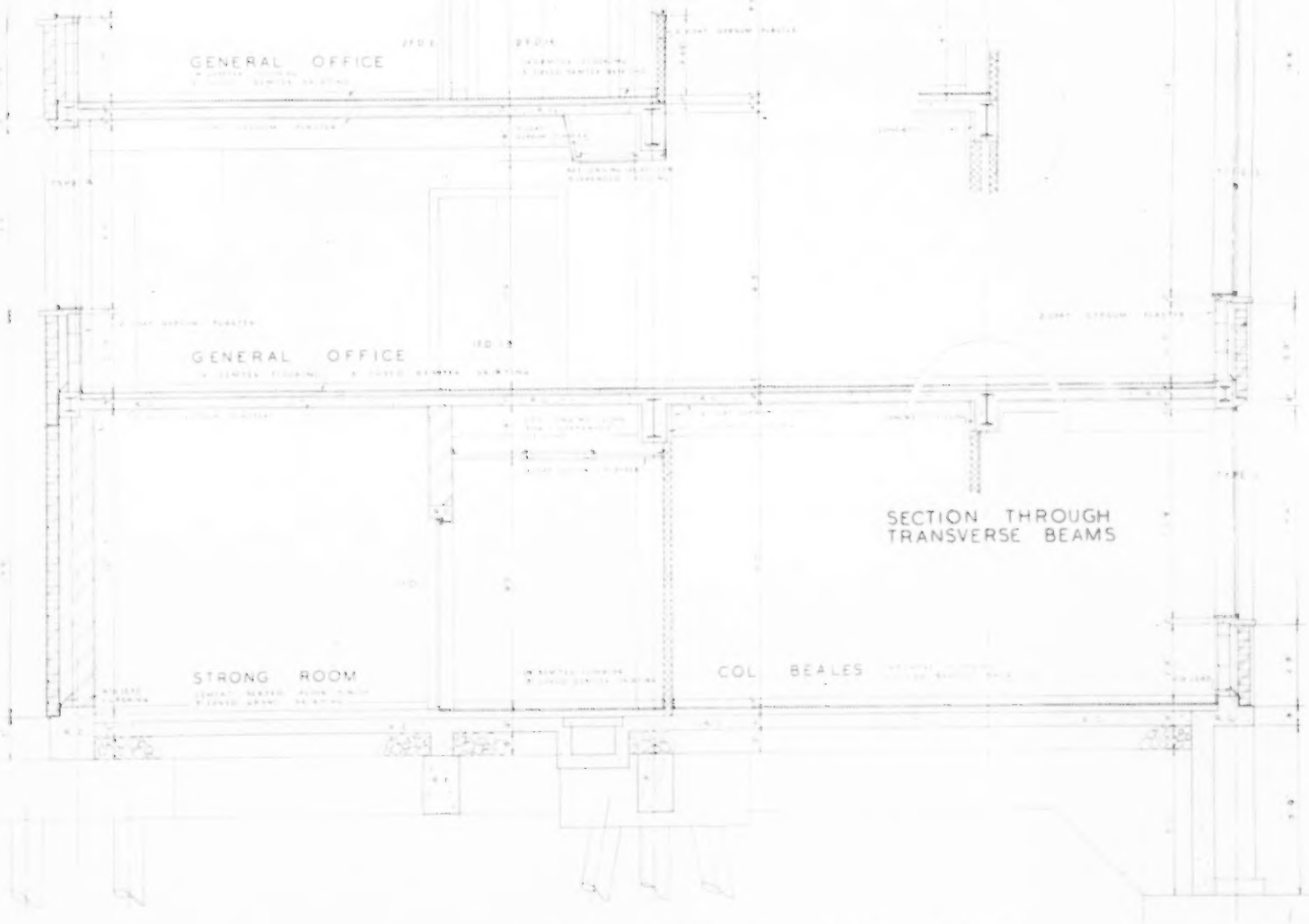
SHIPBUILDERS' OFFICES, WALLSEND-ON-TYNE

ARCHITECTS: RICHARD SHEPPARD & PARTNERS F.A.R.I.B.A.

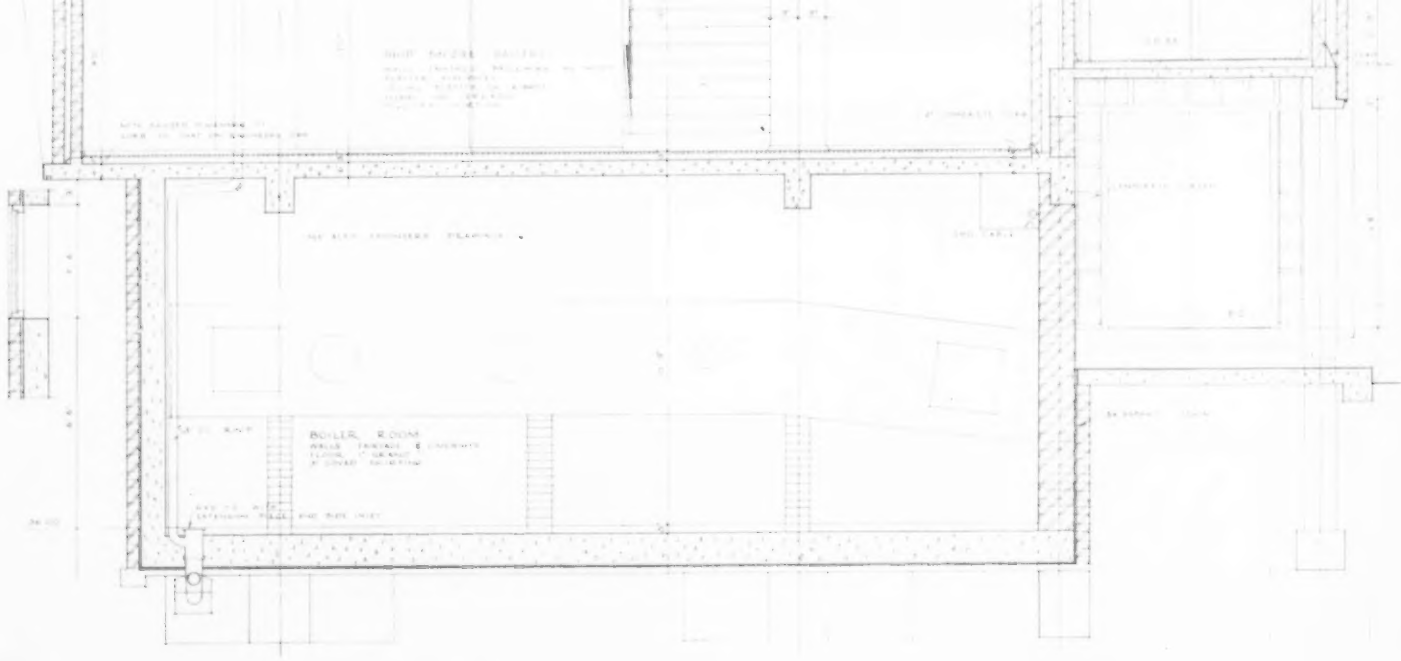
Assistant Architects: C. E. BANTIN A.R.I.B.A. and D. CHALLIS, A.R.I.B.A.


DIRECTORS DINING ROOM
MR HUNTER
STORE
STORE


DIRECTORS DINING ROOM
MR HUNTER
STORE

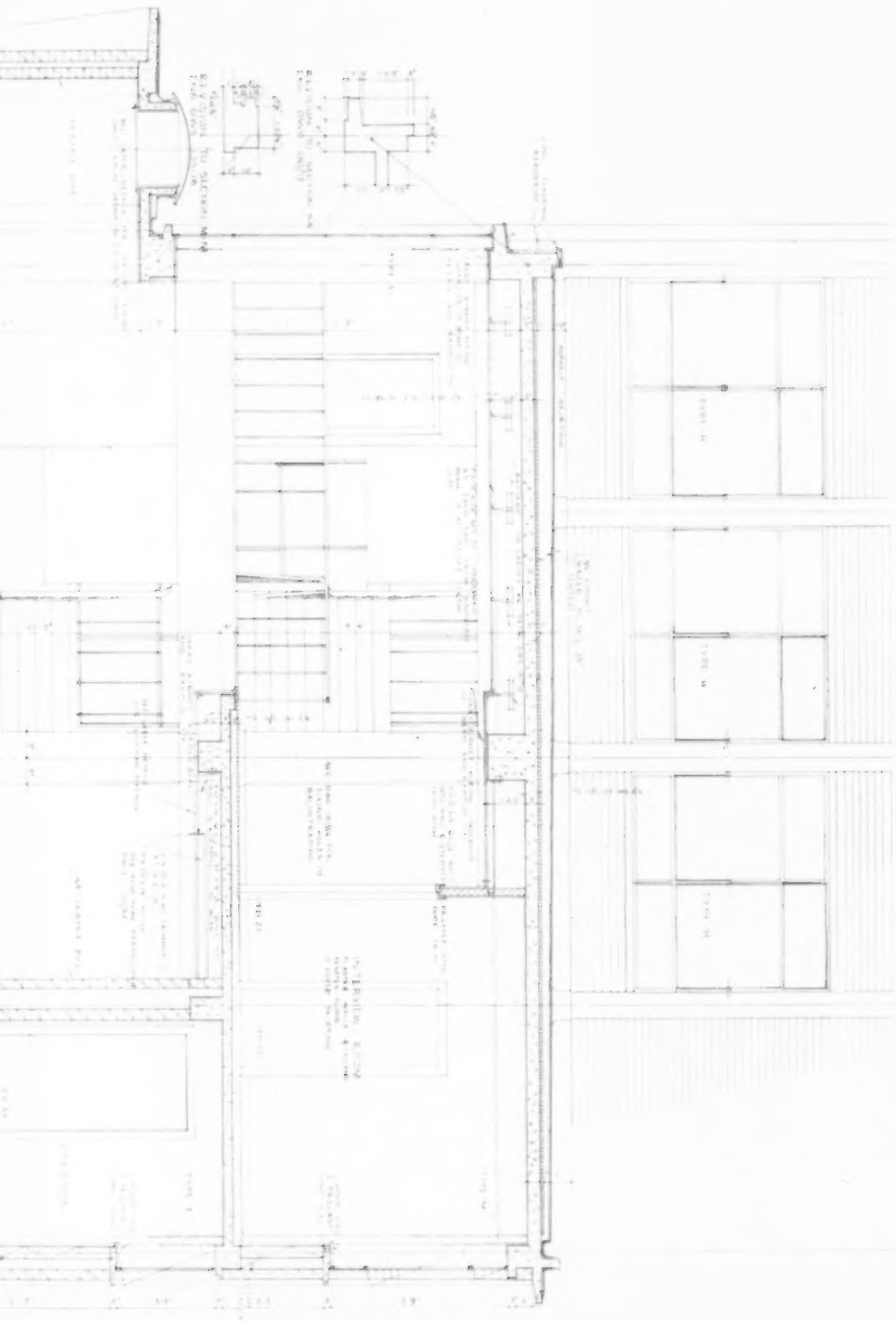


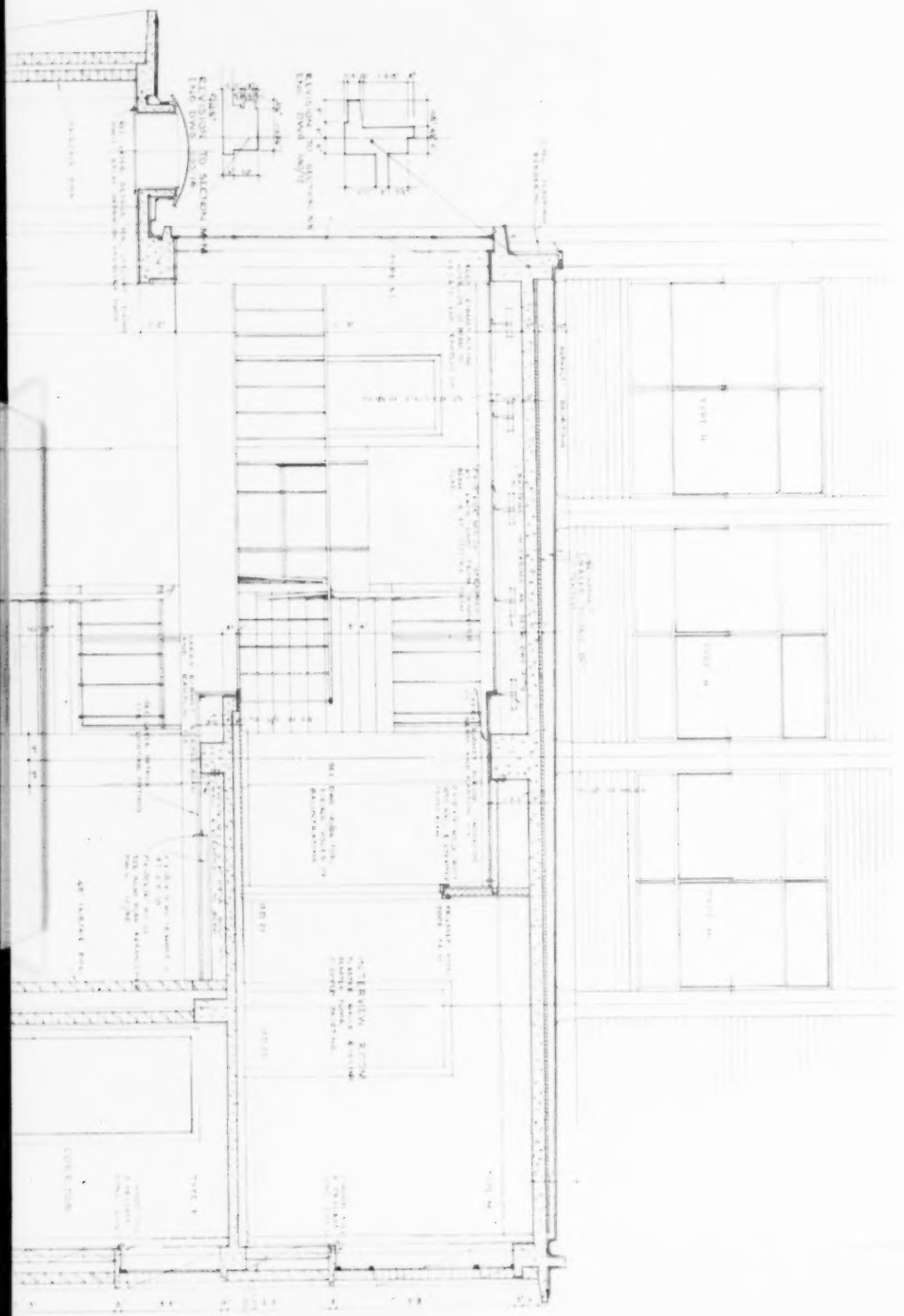
Cross section through main block



Cross section through ship gallery and boiler room

SHIPBUILDERS' OFFICES, WALLSEND-ON-TYNE
ARCHITECTS: RICHARD SHEPPARD & PARTNERS, F./A.R.I.B.A.





NEW Street Corner, Ledbury, before and after restoration of half-timber work. Mr. Edwin Gunn, A.R.I.B.A., gives the following opinion on the merits of this treatment:—

"Even in the case of finely-designed framing intended to be seen, it is not often wise to remove a cladding which at some later date has been applied—usually with good reason. The reasons which led to the cladding of fine timber-framed structures are not difficult to guess; chiefly an advancing standard of comfort, and partly a counter to gradual appearance of dilapidation. Even the slight and inevitable shrinkage of timber admits searching draughts, as anyone may prove by feeling the current which will enter where an oak beam-end penetrates to the cavity of a hollow wall. "Fashion also no doubt had its influence, but it may be doubted whether anyone was quite so silly as to suppose that a coat of plaster on a typical overhung and gabled house would deceive the most casual observer into belief that it was stone. This is suggested as a reason in a recent press article which chronicles and illustrates the removal of external plastering from New Street Corner, Ledbury. Opinion may differ as to whether it has been visually improved by this action—certainly the building is one in which the original framing was meant to show, but in opening up such composite walling the risks which plastering was intended to obviate are also liable to be revived. Perhaps they can be dealt with. They should not be ignored."

Manor House Farm, Kencott, Gloucs., now the property of the National Trust.

POINTS FROM PAPERS

DEVELOPMENTS IN TIMBER TECHNIQUE

Extracts from an Architectural Science Board Lecture illustrated by slides given by

R. T. WALTERS, A.M.I.Struct.E., A.R.I.B.A., at the R.I.B.A., on February 14

THE scientific study of a traditional building material may, at first, only confirm what is already known. Later, as it becomes the source of fresh data, it may lead to the development of new techniques. However much the architect may welcome research of this kind, he is left with the problem of assessing its value in his own work as a designer. Having learned of its existence, he wants to know how far it helps to overcome current difficulties, and to what extent it offers new opportunities for design.

The current difficulty principally associated with timber is its scarcity. Here the results of recent research can be a great help. Where the problem is to make the best use of a limited supply the only certain method lies in the application of structural theory to the choice of sections. This we may call the technical approach.

The technique now available also offers new opportunities to the designer of buildings. Since this is largely a matter of appreciating the characteristic structural forms deriving from the new techniques, we may call it the visual approach. Before we discuss these methods of approach in detail, there are a few general observations to be made.

In *Technics and Civilization* Lewis Mumford shows that timber was the predominant material in technical developments from the 10th century until the end of the 18th century. It was in fact used to provide many of the prototypes for the period of rapid technical progress which took place during the 19th century. The Industrial Revolution introduced the mass-production of both iron and steel, during which time the foundations were laid for the theory of structures applicable to those materials. Timber however was not studied in the light of this new knowledge, and during the first decade of the 20th century was still being used in accordance with the same rule-of-thumb methods of design which had become established during the preceding centuries.

During the last forty years intense scientific study has resulted in a delayed industrial revolution as far as timber is concerned. The incentive was economy, both in forestry and utilisation. This had nothing to do with a dollar shortage, but was partly due to the strategic importance of the material, made evident particularly during the first World War. Research laboratories were set up in America in 1910, in England in 1925, and in many other countries of the world thereafter. On a global basis the supplies of timber have been shown to be inexhaustible, if the task of re-afforestation is properly undertaken. As far as structural utilisation is concerned the scientific study of the material has produced a wealth of new knowledge which can now be seen to fall into three categories, as follows :

(a) The ability to determine the mechanical properties of timber by visual inspection of its natural characteristics.

(b) Greatly improved methods of jointing, which include the invention of timber connectors and modern adhesives.

(c) The establishment of the modifications required to enable normal structural theory to be applied to the material.

TECHNICAL APPROACH

The technical approach to timber design is made comparatively simple because the essential data required has already been published in this country. Most of the information relates to softwoods, but the data on hardwood is rapidly expanding. The economical use of timber depends on treating it as a material of engineering, and this tends to complicate the work from the architect's point of view. But the calculations required for the simpler type of structure should not overtax the average architect's office and mastery of them may save a great deal of time and trouble.

(*a*) *Loading Conditions.*

Firstly there is the question of assumed loading conditions. In the case of structural steelwork British Standard 449 includes recommendations on this subject. For timber however, no such document is available, and current procedure is to work to the recommendations of another B.S.I. publication—*The Code of Functional Requirements of Buildings* : Chapter V—"Loading."[1] This work contains similar recommendations to B.S. 449 and represents the most up-to-date thought with regard to the probable effect of snow, wind and other loads on buildings.

(*b*) *Safe Working Stresses.*

The next step is to decide on the safe working stresses which may be applied to the timber. If expert assistance is available in the selection of the material the architect's specification need only refer to the appropriate structural grade as defined in British Standard 940: Parts I and II.[2] The grading rules in this document however are not at present applied to timber which is commercially available in this country. The situation in America is somewhat different, where it is possible to buy timber which has been graded either for strength or for appearance, as required. In the absence of grading facilities certain assumptions have to be made about the strength of the material. It has been found that most of the softwood commercially selected for carcassing purposes in this country is at least as good as the 800 lb. f. grade laid down in B.S. 940 : Parts 1 and 2. The following basic stresses may therefore be assumed for softwood :

	Per sq. in.
Safe working stress in tension, bending and compression parallel to the grain	800 lbs.
Safe working stress in compression perpendicular to the grain	190 lbs.
Safe working stress in shear parallel to the grain	70 lbs.
Modulus of elasticity	1,200,000 lbs.

Care should be taken to avoid severely sloping grain and members containing knot clusters should be excluded. In general such material may readily be drawn from the unsorted and 5ths qualities of European Redwood and Whitewood and merchantable qualities of Douglas Fir, Western Hemlock and Sitka Spruce. The stresses given are of course very low, and such higher values may be taken for the same species if the material is suitably graded.

(*c*) *Increase Factors.*

Basic stresses for timber are applicable to conditions of permanent loading and may be substantially increased if part of the load is of a temporary nature, i.e. due to snow or wind. For beams they may be multiplied by 1.15 for a combination of dead plus snow load, and by 1.2 for a combination of dead plus wind load. On the other hand they should be multiplied by 0.85 if the timber is occasionally wetted and re-dried, and by 0.70 if it is continuously exposed to damp conditions.

(*d*) *Tolerances.*

Given the loading conditions and the basic working stresses of the material, the design of a simple component such as a beam presents no difficulty. In finding the section modulus of a rectangular member it should be remembered that sawn timber does not always measure its full nominal size. British Standard 1175 : 1944[3] sets out the permissible minus tolerances which may be assumed, as follows :

Dimensions up to 1"	1/16"
" over 1" but up to and including 2"	1/8"
" over 2" but up to and including 8"	3/16"
" over 8"	1/4"

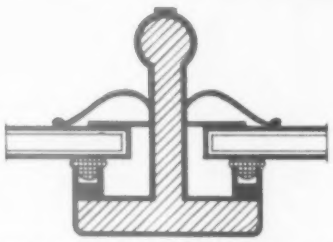
1. *Code of Functional Requirements of Buildings.* Chapter V. — "Loading." (B.S.I.)

2. *Grading Rules for Stress-graded Timber.* British Standard 940, Part 1: 1944

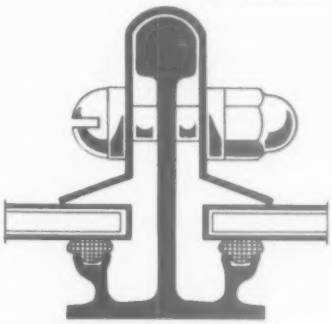
2. *Grading Rules for Structural Timber.* British Standard 940, Part 2 : 1942.

3. *Sizes of Stress-graded Softwood Timber.* British Standard 1175 : 1944.

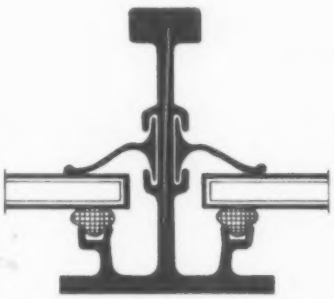
HOPE'S



THE ORIGINAL *Lead-clothed Steel Glazing Bar*
Permanent and Weathertight



THE ALTERNATIVE
Aluminium Glazing Bar
with Aluminium Capping



A COMBINATION
Aluminium Glazing Bar
with Lead Wings

Patent Glazing

HENRY HOPE & SONS LTD.
Smethwick, Birmingham & 17 Berners St., London, W.1

THE PARK FOUNDRY (BELPER) LTD.

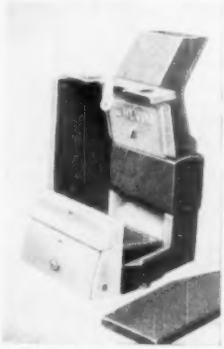
TELEPHONE
BELPER 210 211 393

TELEGRAMS
PARK FOUNDRY BELPER

SOLID FUEL HEATING APPLIANCES

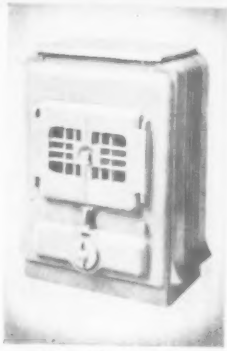
The Chevin Grate and Flue Set

The CHEVIN self-contained flue set is suitable for interior frame or tile opening, 16 in. wide by 22 in. high. The fire-back has a removable plate giving free access to the boiler and main flue. Either copper or wrought welded boilers can be supplied, with tappings at the side, handed as required. Easy access is obtainable by removing the side bricks as shown, and the flue casing has a sliding damper, operated by a tool supplied. An interior frame suitable for slabbing into a surround can be supplied. This set incorporates the Chevin Smokeless Fuel Grate.



The Chevin Grate and Flue Set.

The Chevin Convector Fire.

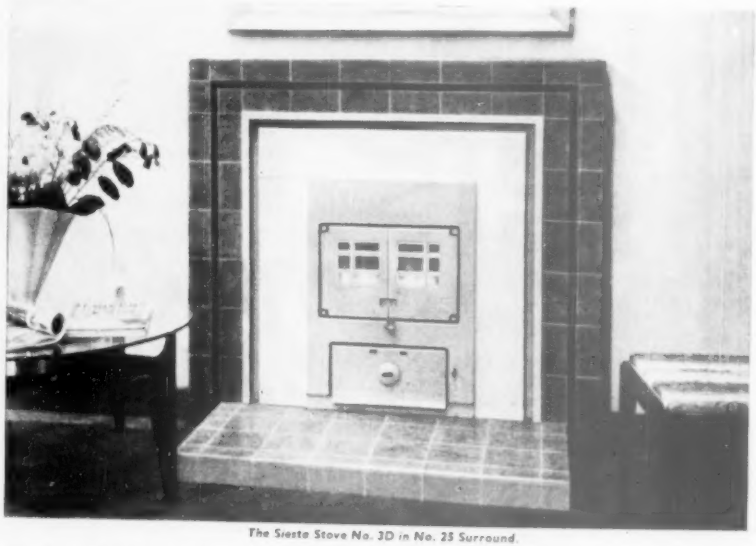


The Siesta Stove No. 2A.

The Chevin Convector Fire

A self-contained open convector fire, using the "Chevin" Smokeless Fuel Grate. When installing the double-cased unit a duct should be provided to supply fresh air to a sump under the baseplate. This air passes inside the convector fire casing, becomes heated, and is directed by ducts to other parts of the house for background heating. Where the single-cased model is used for convection heating in the same room, no fresh air or warm air ducts are necessary. Inlet grills at the base of the surround, and a warm air outlet grill in the surround above the fire should be fitted.

A boiler may be fitted to either model for the supply of domestic hot water, and models are supplied for use with interior frame and tile opening fireplace. With this combination, the "Chevin" in one or other of its forms, solves practically all heating problems. Radiation, convection and water heating can be combined or separated in whichever way required.



The Siesta Stove No. 3D in No. 25 Surround.

The Siesta Stove No. 2A

A free standing solid fuel stove, providing radiant and convected heat, and when a boiler is fitted, sufficient hot water for the average household. The high efficiency and low fuel cost make this stove the most economical form of heating.

Any of the usual domestic fuels may be used. The total heat output of the stove (radiant and convected) will heat a room of 1,500 cu. ft. when a boiler is fitted, or 2,500 cu. ft. without a boiler. The boiler output is 10 12,000 B.Th.U.s Hr., depending on fuel. This is equivalent to 16-20 gallons per hour at 110 deg. F. (Cold water temperature 50 deg. F.). Storage cylinder should not exceed 25 gallons.

The Siesta Stove No. 3D in No. 25 Surround

With inset slow combustion stoves and convector fires, some form of removable surround is desirable for access to boiler connections, and for flue cleaning.

The No. 25 Surround has been designed to suit the No. 3D "Siesta" Stove and all models of "Chevin" Convector Fires. Made of cast iron, it is finished in vitreous enamel.

For further information apply direct to the manufacturers.

(e) Sources of Data.

Perhaps the most important and useful document of all is another B.S.I. publication—the draft British Standard Code of Practice *The Structural Use of Timber in Buildings*.[4] This work contains the essential data required in the design of all but the most complex timber structures. It assumes the use of established structural theory and provides the modification factors by which that theory may be applied to timber. In truss design for instance, the forces in the members are found by the usual graphical or mathematical methods. The Code describes the simple calculations needed to choose the correct sizes of tension and compression members. It also contains the safe loads and limiting factors which govern the detailing of joints using modern methods of connection. The recently-published book *An Introduction to the Design of Timber Structures* by Phillip O. Reece[5] is a valuable guide to the use of the Code in the design office. Reference may also be made to an American work, *National Design Specification for Stress-Graded Lumber and its Fastenings*, published by the National Lumber Manufacturers' Association, of Washington.[6] Whether the problem is the design of a simple floor or a complicated framed structure, it will generally be found that the use of these references results in substantial economy as compared with traditional methods of design.

(f) Mechanical Connections.

Also necessary to the design of an efficient timber frame is some knowledge of the design of joints. In this respect modern timber frames are essentially different from traditional timber structures. It would appear that the design of joints in compression presented no difficulty to traditional builders, who developed many ingenious and successful techniques for such joints. Joint in tension however presented them with a problem to which they found no adequate solution. The result has been a striking absence of properly triangulated timber frames among their work. There is room here for an interesting historical study, but it will generally be found that whether by instinct or by knowledge the traditional builder designed his load-bearing timber structures, particularly roofs, in such a way that the majority of the important joints were in compression. This led to the development of architecturally interesting roof designs such as the hammer-beam roof, but it placed a severe limitation on the size of the clear span which could be covered. The solution of the problem of the tension joint was first found in the kübler dowel developed in Germany before the first World War. This type of "surface dowel" has since been used as the basis of all modern timber connectors. In every case the purpose of the connector is to transmit the load from one member to another through a greater area than is possible by the use of traditional methods, i.e. bolts, nails or screws. Moreover the transference of the forces in connector joints takes place at the interfaces of the members, where it has been shown that the intensity of stress is highest. The various types of connector which are commercially produced have been described in detail elsewhere. Their greatest development has taken place in America, but they are also widely used in many European countries. In Great Britain at the present time only two types of connector are marketed, the Bulldog toothed-plate connector and the split ring. In the case of the Bulldog connector no reliable foreign data is available, and extensive tests have been carried out and are continuing as the result of collaboration between the Timber Development Association and the Forest Products Research Laboratory. Safe working loads and limiting dimensions for the use of these connectors have been published, and the application of them in design is a comparatively simple matter.

Bulldog timber connectors are made in three common sizes, 2", 2½" and 3" diameter, and are normally holed for use with ¾" diameter bolts. They are made double-sided for wood-to-wood connections, and single-sided for wood-to-metal connections. In the case of wood-to-metal joints, since the load from the metal plate has to be transferred through the bolt to the connector the single-sided Bulldog connector is provided with a small raised collar round the bolt hole, to increase its bearing value.

It is interesting to make a comparison between the load-bearing capacity of Bulldog connectors used in conjunction with bolts, and of bolts alone. In certain cases, principally joints loaded parallel to the grain, the advantages gained by using connectors are slight. In most framed structures however, members meet at a joint at various angles. It will be found from the Code of Practice that the safe working values of bolts alone decrease rapidly when the load is at an angle to the grain. In such cases Bulldog connectors will be found to be much more efficient. Moreover in tension joints the use of bolts alone calls for rather long end distances, that is to say there must be a substantial amount of timber between the bolt and the end of the member in order to prevent the tendency of the bolt to shear out at the end. In Bulldog connector joints this tendency is much less marked and the end distances can be correspondingly shorter. In truss design, and particularly where suspended ceilings have to be fixed, this will be found a considerable advantage.

The assembly of joints with Bulldog connectors can be carried out by the average building operative. By specifying washers larger than commercial size and made from ⅛" thick mild steel the embedding process can be carried out in most softwoods without danger of the washer becoming pressed into the timber. For denser species a special high tensile bolt can be provided by the manufacturers of the connector, used in conjunction with much heavier washers. In such cases the high tensile bolt is removed after the embedding process and is replaced with a normal commercial bolt.

The split ring connector has recently come into production in this country, and is at present available in the 2½" internal diameter size used with ¾" diameter bolts. For connector, split rings are far more efficient than Bulldog timber connectors. They are however, somewhat more expensive, and it is necessary to cut grooves in the members to be joined to allow the insertion of the rings. These grooves are normally made by means of a special cutting block fixed above the drill which cuts the bolt hole. This block is fitted with cutting knives and a stop, so that the groove is cut to the correct diameter and the correct depth. The ring is tapered in cross-section to facilitate insertion, and is split in order to ensure that it comes into full bearing when the joint is loaded. Very comprehensive data is available from American sources on split ring connector design. The loads which split ring connectors will carry are affected by the species of timber used, the direction of the load in relation to the grain of the member, the width and thickness of the members to be joined, the end distances, and whether the load is in tension or compression. Some study of this data is required before split ring connector joints can be designed with confidence, but the general procedure is not dissimilar to the detailing of a bolted or riveted joint in steelwork. Split ring connectors can only be used for wood-to-wood joints. Their counterpart for wood-to-metal joints is a shear plate, which is not at present available in this country. Other types of connector commercially available in the United States are claw plates and spiked grids, used for the heavier type of timber construction. Full design data on the use of split rings, shear plates and claw plates are included in the draft British Standard Code of Practice referred to.

In addition to the development of timber connectors, a scientific investigation has been made of the strength of joints using more traditional types of fastening such as nails, screws and bolts. The essential design data applicable to these fastenings is contained in the draft British Standard Code of Practice. It will be found that considerations such as the thickness of the member, and distance, edge distance and spacing all have to be taken into account, and in order to guarantee the strength of such joints, working

4. Draft British Standard Code of Practice, C.P. 112. *The Structural Use of Timber in Buildings*.

5. *An Introduction to the Design of Timber Structures* by Phillip C. Reece (E. & F. N. Spon Ltd.)

6. *National Design Specification for Stress-graded Lumber and its Fastenings*, 1944, revised 1948. (National Lumber Manufacturers' Association, Washington.)

details should be produced setting out the exact positions of the fastenings. Nails are particularly worthy of investigation because they are much cheaper to make and to use than any form of connector, and quite often provide adequate strength for lightly-loaded components. It has been found that if holes for nails are pre-bored about four fifths of the diameter of the nail, they may be spaced much closer together without danger of splitting the timber. It is generally the minimum spacing of the nails which governs the design of the joint, since in most cases the difficulty is to insert enough nails into the contact area between the members to be joined. The existing data is mostly based on the use of ordinary round chequer-headed wire nails in standard gauges and lengths. Various processes have been tried for increasing the resistance of the nails to withdrawal. Among these the technique of coating the nails with cement slurry which is allowed to dry before the nails are driven, and another method is to coat the nails with glue which is allowed to set after the nails are in place. This latter method, although costly in practice, produces remarkable results.

(g) *Lamination.*

We may now proceed to discuss some of the technical aspects of laminated timber construction which has been very substantially developed in recent years. Lamination is simply the extension of a very old technique into the field of structural components, taking advantage of the greatly improved adhesives which are now available. The types of glue most widely used for laminated structures are the caseins. Research and practical experience have proved them to be perfectly satisfactory for normal protected positions where the moisture content of the timber does not rise above 20%. They provide the essential feature of any adhesive used in laminated work, namely that the glue-line shall be at least equal in strength to the timber in horizontal shear. The casein glues, which are made from sour milk derivatives, are reasonably cheap and easy to handle. Their disadvantage is that they lose strength when they become wet. In spite of their organic nature they are remarkably resistant to attack from micro-organisms and chemical fumes, and can be reinforced with suitable toxics if necessary.

For all conditions where high moisture content is likely to be encountered one of the synthetic resins should be used. Data at present available indicates that the phenol and resorcinol formaldehyde types are the most durable and are completely impervious both to moisture and to decay. The urea-formaldehyde group has so far provided durability figures somewhere between the phenol and casein types of adhesive. As the properties of adhesives improve however, they tend to become not only more expensive but more sensitive to the shop conditions in which they are used. It is essential that they should be handled in accordance with the makers' instructions, and owing to the fact that their pot life is often limited they should be applied by skilled and reliable operatives.

Vertical Jig for lamination

Structural components may be laminated either vertically or horizontally. Vertical lamination is most applicable to straight columns or beams in which a greater length or cross-section is required than is obtainable from solid timber. In the case of vertically laminated beams the safe working stresses for a given grade of material may be substantially increased, due to the fact that the incidence of defects which reduce the strength of the member is decreased. Similar increases in stress may be applied to members subjected to either pure tension or compression.

A horizontally laminated beam on the other hand will not provide the same increase in stresses. Since the top and bottom laminates are critical there is the same probability of knots or other defects occurring that there would be in a solid member. At the same time it is permissible to use a lower grade of material for the laminates in the centre of the section, since these are less highly stressed.

Briefly the technique of horizontal lamination is as follows :

The individual laminates are first sawn and then planed to the correct size. They are then joined end-to-end, generally with a simple glued scarf joint. The next process is to pass the laminates through a mechanical glue-spreader and to assemble them on a jig made to the exact concave profile of the component. The laminates are built up, one on top of another, dry and unheated, with the glue applied. Pressure is then provided by means of suitable clamps, of between 100 and 200 lbs. per square inch, and the component is left until the glue sets. Thereafter the component is removed from the jig, its surfaces are finished and a moisture seal is applied.

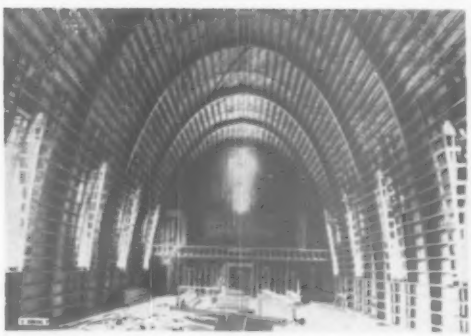
The design of laminated components is extremely interesting, and one or two general points may be noted. Firstly the theoretical analysis of forces is made in accordance with normal structural theory. If the component is statically determinate, for example a three-pinned arch, it is possible to set up on a basis of co-ordinates the calculated cross-section required in accordance with the controlling loading conditions. In other cases it is necessary first to assume a cross-section and then to check it by calculation. Safe working stresses for laminated construction are obtained from American data. These safe working stresses are given for conditions of permanent load, and have to be modified by a number of factors. The factors provide for conditions where part of the load is of a temporary nature. They also vary the stresses according to the radius of curvature, the depth of the cross-section in relation to its width, the conditions of manufacture and the conditions of service.

One of the attractive features of laminated construction is that the components may be tapered to comply with structural or aesthetic requirements. It is generally advisable to maintain a batch of laminates running continuously from one end to the other at the top and bottom of the section. A common procedure therefore is to build up a series of laminates on the jig and to curtail them in the manner familiar in steel plate girder design. The curtailed

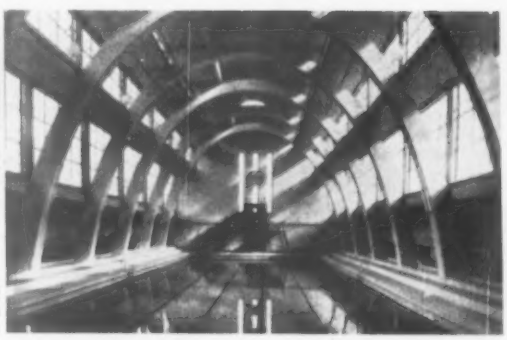
Interior of theatre, U.S.A. Segmental laminated arches.

Church of St. John the Baptist, Hugo, Minneapolis, U.S.A.

232 feet span Bowstring truss, U.S.A.



Church at Minneapolis, U.S.A. Laminated timber arches.

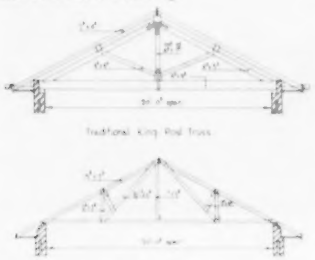


Northampton Public Baths. Reinforced concrete arches.

laminates are then planed off to provide a smooth surface, to which the additional laminates are added. Owing to the extra labour involved however, the tapering of laminated components adds considerably to their cost.

The choice of material for laminated work should be carefully gauged in accordance with the function of the component. It is unnecessary to use completely clear and straight-grained timber except in very exceptional circumstances, but it is also a fallacy to think that lamination can provide a structural outlet for material which is so poor as to have very little other value. In practice the presence of very large knots and other defects makes machining more difficult, makes the laminates less easy to bend, and is liable to result in imperfect glue lines. Generally speaking, laminated construction calls for grades similar to those used in normal framed timber construction. With judicious selection, laminates can be sorted in such a way that the presence of knots does not detract from the appearance of the finished component.

At the present time it has not been found possible to laminate any member as cheaply as it can be made in solid timber. Lamination must therefore be justified by the fact that the particular shape and size of the component cannot be obtained in any other way. On the other hand the use of laminated members has sometimes obviated the need for a suspended ceiling and has been known to result in an over-all reduction in the cost of a building.



Traditional King Post Truss

Modern Trussed Rafter

VISUAL APPROACH

(*a*) *Comparative Lightness.*

When we examine modern timber structures from the point of view of their appearance, the most striking feature is the comparative lightness of the members. Generally speaking, traditional timber components are far too heavy for the work which they have to do. It may be held that the average 16th century half-timbered house is an aesthetically satisfactory structure, and it may be that this type of construction represented one of the most economical forms of building in its own epoch. By present-day standards however, such structures must be considered far from economical. The same is true of many of the designs for timber trusses still taught in our schools of architecture and building. A comparison between any traditional king-post roof truss and a modern trussed rafter designed to do approximately the same work will make this clear. It must be considered unlikely that we shall ever return to conditions which allow the excessive use of a basic structural material. There is reason to believe that the lighter form of timber component will gradually become more commonly used, and will in time create its own tradition.

It will be found that the new techniques are producing structures of two distinct types, depending on the method of jointing used. The use of timber connectors tends to produce the type of triangulated frame which has become so familiar in steelwork. The use of adhesives in laminated construction, on the other hand, tends to produce curved members such as arches and members which rely on continuity in their joints, such as portal frames. The visual approach may therefore be discussed from these two points of view.

(*b*) *Characteristics of Modern Timber Forms.*

Modern timber frames are nearly always arranged so that the centre lines of members intersect at the joints. In fact any of the bracing systems used in steel-framed components may be applied to timber frames. In the case of simply-supported trusses, however, it will be found that the Belgian or Pratt types are preferable to the Fink lay-out, because they produce such simpler joints. Depending on the span and the pitch, the members are best arranged so that the angles between them are neither too flat nor too steep, and a useful device is to place the struts so that they are set off from normal to the rafter by an angle equal to half the pitch.

Furthermore, it is desirable that members meeting at a joint should be in different planes. In this way one or more bolts may be passed through all the members with a suitable number of connectors provided at the interfaces. It is therefore quite usual to make the rafters and main tie of a truss of two members each with a space between them. The ties may then lie in the middle, and the struts may be made double and placed on the outside. Such an arrangement makes the truss easy to fabricate and to erect.

It is not as simple to design gusset plates in timber as in steel, due to the fact that it is difficult to obtain timber in sizes wider than 11in. and that the timber is weak in horizontal shear and should never be loaded in tension at right angles to the grain. Investigations are being made into the use of plywood gusset plates, but these have not been carried sufficiently far to justify general application of plywood for this purpose.

As far as lattice girders are concerned, the same general considerations apply. It will be found quite simple to design the normal "N" type of girder in timber with the diagonal members either in tension or compression. Should the design call for a counter-braced girder, this again presents no difficulty in timber. The normal type of analysis involving the superimposition of loads derived from two stress diagrams is applicable.

Framed timber trusses and girders are not aesthetically interesting as a rule. This may be due to the fact that there is no obvious visual distinction between tension and compression members. The same, of course, is true of the normal steel-framed truss or girder, where rolled steel angles are used throughout. Some of the earlier designs of steel trusses, in which rods were used for tension members, and angles, channels or H-sections for compression members, are more attractive to look at, especially when the joints were carefully designed. This differentiation between the structural function of members is, however, lost in modern trusses.

It is perhaps only the larger type of framed structure that begins to be visually interesting, and this is not due so much to the arrangement of the framing members as to the overall shape given to the building.

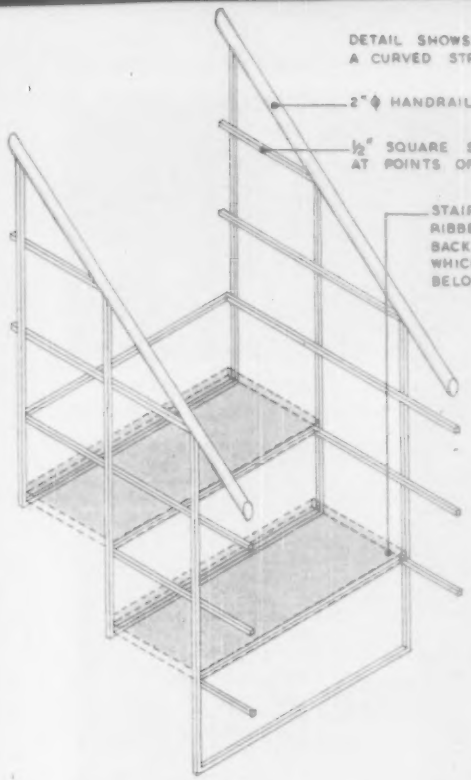
(*c*) *Characteristics of Glued Laminated Structures.*

The use of lamination, on the other hand, does tend to produce components which are immediately interesting in appearance. The Americans, who began a serious study of lamination in 1935, have not only mastered its technique but have produced the most dramatic examples of its application. Special stimulus was provided during the last war by the Service departments, particularly the U.S. Navy, who commissioned many large timber buildings when steel was in short supply.

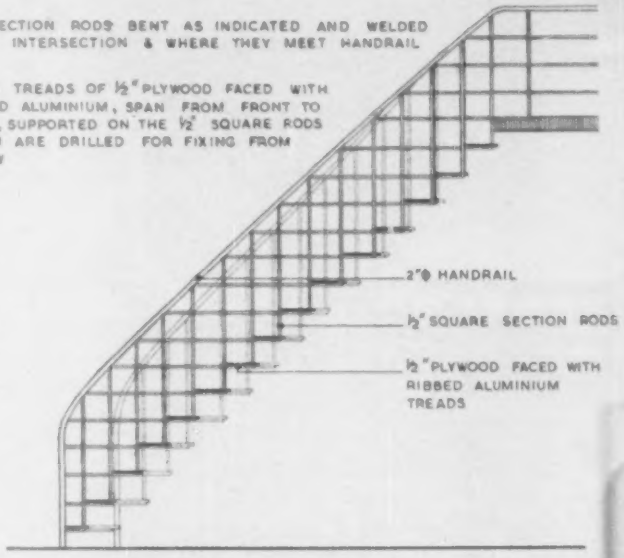
For large spans where clear headroom is required, the predominating forms are parabolic or segmental arches. Site joints are provided where necessary, but the components are normally shop fabricated in sections which are as large as possible. Due to the high strength-weight ratio of timber, erection is simple when compared with corresponding units in other materials. In America it is now almost standard practice to cover the arches with close boarding laid on purlins at about 2 feet centres. The boarding, which is often placed diagonally, is protected with waterproof felt. This type of construction provides an immensely strong and rigid building.

The curved shapes of laminated components lend themselves naturally to interesting interior treatment. Designers often prefer to leave the structural members exposed, generally in their natural colour. The best pro-

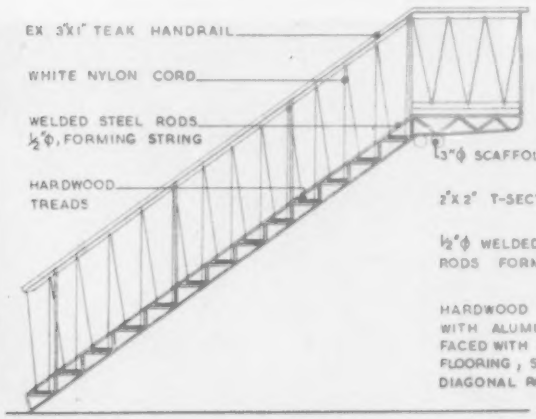
DETAIL SHOWS CONSTRUCTION OF STAIRCASE, THE WHOLE FORMING A CURVED STRUCTURAL LATTICE WORK CHANNEL


2"ϕ HANDRAIL
½" SQUARE SECTION RODS BENT AS INDICATED AND WELDED AT POINTS OF INTERSECTION & WHERE THEY MEET HANDRAIL
STAIR TREADS OF ½" PLYWOOD FACED WITH RIBBED ALUMINIUM, SPAN FROM FRONT TO BACK, SUPPORTED ON THE ½" SQUARE RODS WHICH ARE DRILLED FOR FIXING FROM BELOW

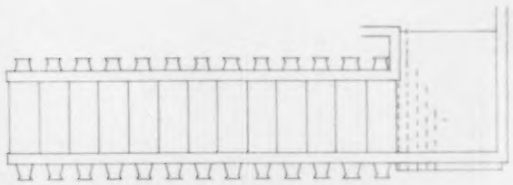
DETAIL OF CURVED STAIRCASE • SCALE ¾" TO 1'0"



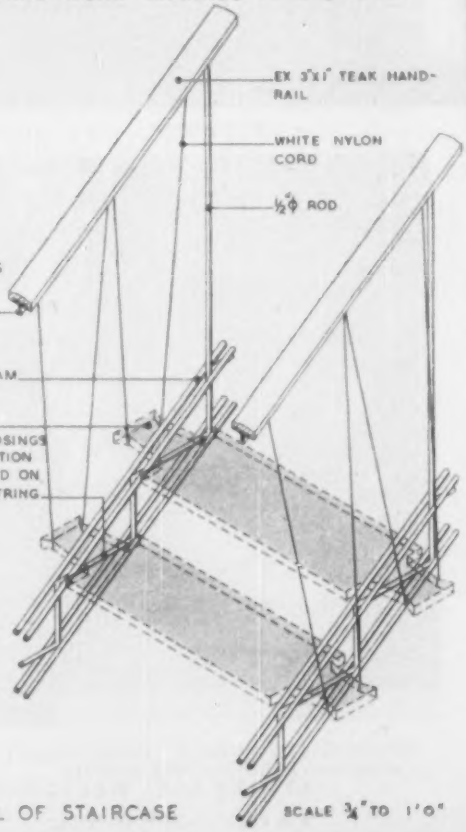
ELEVATION OF CURVED STAIRCASE • CONSTRUCTED AS LATTICE WORK CHANNEL • SCALE ⅛" TO 1'0"



ELEVATION OF STAIRCASE • SCALE ¼" TO 1'0"

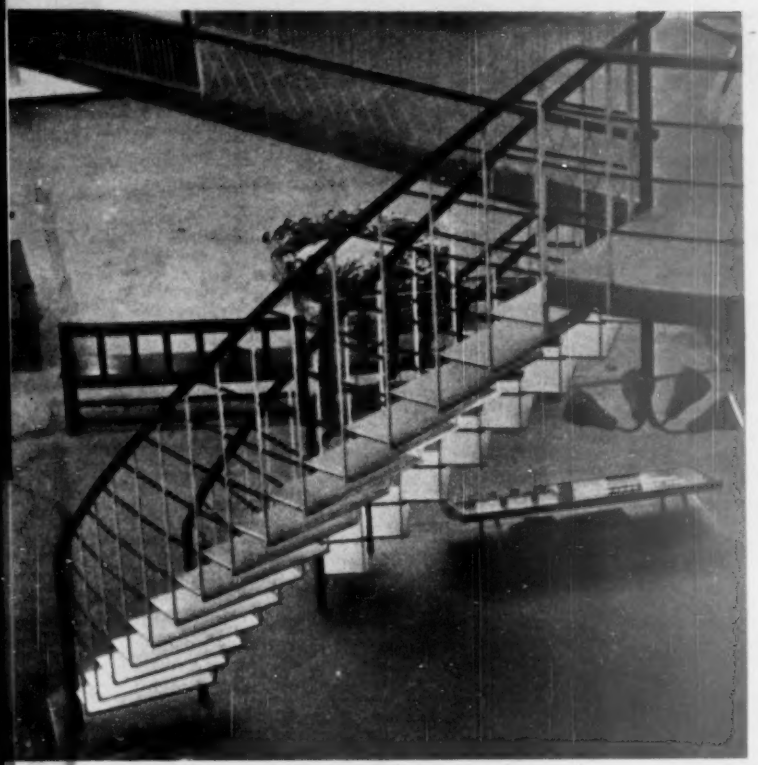


PLAN OF STAIRCASE • SCALE ¼" TO 1'0"

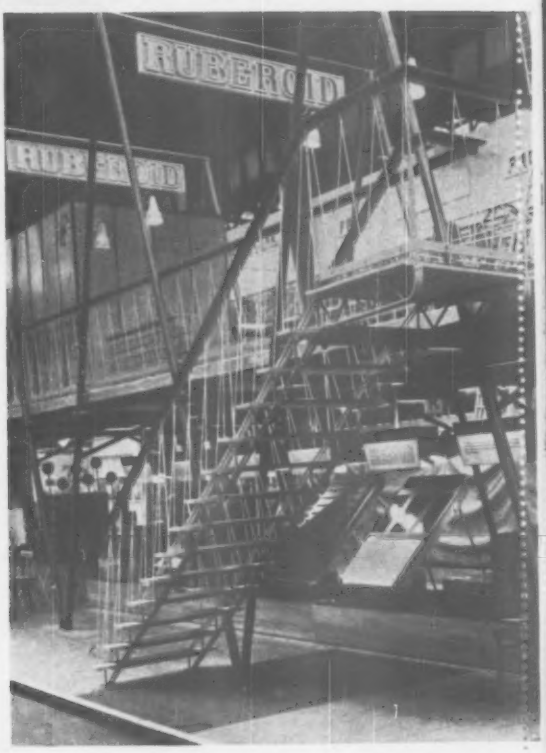

EX 3"X1" TEAK HANDRAIL
WHITE NYLON CORD
½"ϕ ROD
3"ϕ SCAFFOLD TUBES
2"X2" T-SECTION
½"ϕ WELDED STEEL RODS FORMING BEAM
HARDWOOD TREADS WITH ALUMINIUM NOSINGS FACED WITH COMPOSITION FLOORING, SUPPORTED ON DIAGONAL ROD OF STRING

DETAIL OF STAIRCASE SCALE ¾" TO 1'0"

TWO STAIRCASES ON STANDS AT THE BUILDING EXHIBITION • above- JAMES HOLLAND & PETER CHAMBERLIN below- ERIC BROWN & PETER CHAMBERLIN



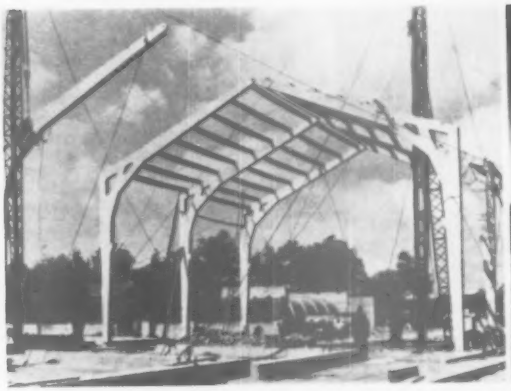
STAIRCASE DESIGNED BY
JAMES HOLLAND AND
PETER CHAMBERLIN



STAIRCASE DESIGNED BY
ERIC BROWN AND
PETER CHAMBERLIN

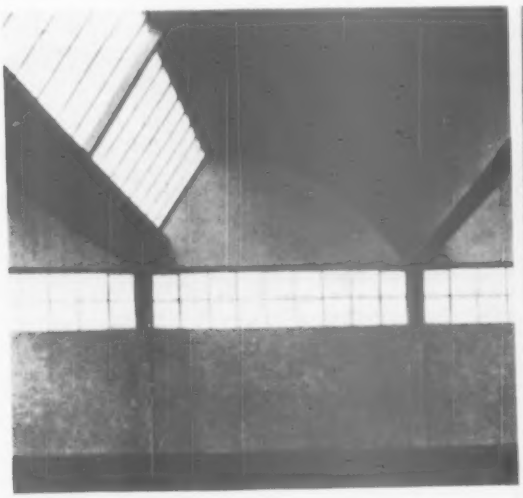
Rubber factory and warehouse.
Architect : J. T. Canizaro. Shell concrete construction.

Factory for Brunswick Drug Co., Calif.
Laminated timber construction.



Glover system, three-pinned precast concrete frames.

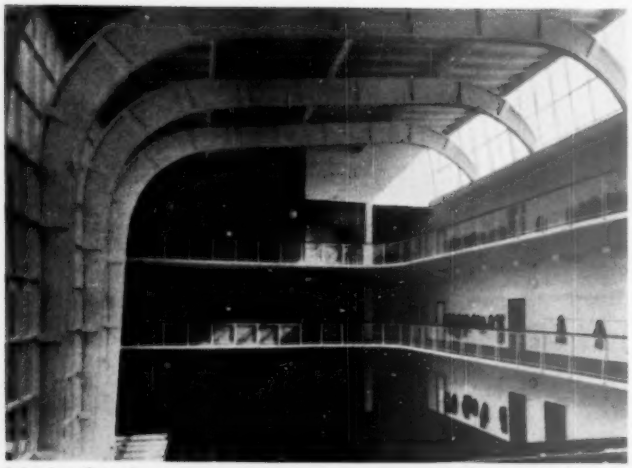
U.S. Army Chapel, Oregon. Three-pinned laminated timber frames.



Above : Clothing factory, Congleton. Architect : Rudolf Frankau. Shell-concrete north-light construction.

Factory in Zurich. Architect : Dr. E. Staudacher.
Laminated timber north-light construction.

DEVELOPMENTS IN TIMBER TECHNIQUE



School at Copenhagen. *Architect : V. Jacobsen*

cedure is to apply the surface treatment, for instance wax or clear cellulose, in the fabricating shop, after which the whole component is wrapped in waterproof paper before dispatch. Except at the connections, the paper remains in place until the building is completed, thus assuring a perfect finish. Portal frames, particularly of the three-hinged type, lend themselves readily to lamination. In general, however, the radius of curvature at the knee will be much less than that of a parabolic or segmental arch. Care must then be taken in selecting the thickness of the individual laminates, since they should not be bent to a radius less than 100-150 times their own thickness. Sharper radii, therefore, need more laminates and produce a more expensive component.

The modern Bowstring truss, developed in America, is interesting technically as well as in appearance. It consists of a curved laminated top chord with the main tie and bracing members of solid timber, the joints being made with timber connectors. It is thus a unique and satisfactory combination of the framed and laminated techniques. Mostly used for industrial buildings, the bowstring truss is efficient and economical, particularly for large spans. Assembly is simplified by making the top chord and main tie of two members each, so that the bracing may be fixed between them. The largest bowstring trusses so far constructed have a span of 232 feet and a particularly attractive arrangement of members. They rest on heavy pin jointed supports, made integral with the steel heel strap which transfers the thrust of the top chord to the horizontal main tie.

Several Continental countries, led by Sweden, have accepted lamination as an architecturally useful technique. So-called "Töreboda" construction uses I-section members as compared with the plain rectangular section of most American examples. The horizontal laminating process is however similar. The firm at Töreboda has been in continuous production of laminated structures since 1919, and although their work is not often on such a large scale as that of the American fabricators, it is sometimes more adventurous in design. The architect of the Army Mess Hall at Ulriksdal has exploited one of the essential characteristics of lamination in making the columns of his building continuous with beams of different depth.

Sweden also produces an entirely different technique of lamination, generally called "HB" construction. Here the web members consist of two layers of 1in. boards, placed diagonally and at right angles to one another. The chords are laminated in the usual way and nailed to the webs. HB construction is cheap, efficient and suitable for very large spans, but its characteristic appearance may not always be acceptable for interior design.

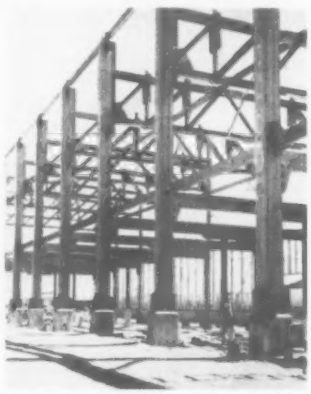
Denmark, Norway and Switzerland are also taking part in the development of lamination. V. Jacobsen's school at Copenhagen makes bold use of laminated frames which are fabricated on the Töreboda system. Erection of these prefabricated frames in reinforced concrete would have been a major problem, but in timber no difficulty was encountered.

(d) Comparison of Structural Frames in Timber and Other Materials.

It is worth making a comparison between the structural forms developed from modern timber techniques and those of other materials. In general, there are some striking resemblances. The parabolic form has been exploited in reinforced concrete as in timber, as seen in the Northampton Public Baths and the church at Minneapolis. Similarly, two factory buildings, both in America, have flat curved roofs supported by free standing columns, one roof being in shell concrete, the other of laminated ribs and boarding. The portal frame, familiar in precast concrete construction, may be compared with its counterpart in timber, while the framing of the Consolidated Aircraft Factory in Arizona is so like normal steel construction in appearance that only the rectangular cross-section of the members confirms that it is built of timber. Even in north light roof construction, where shell concrete has recently been used to excellent advantage, a remarkably similar system has been devised in Switzerland based on the same structural conception.

CONCLUSION

To sum up, we have seen that the means are now available, both for making the best use of small quantities of timber and for interesting architectural applications, when sufficient material is available. The procedure of designing a timber structure on engineering principles is probably as complex, but not more so than a corresponding steel or reinforced concrete structure. For the simpler problem there is much to be gained by the practising architect if his staff is in a position to do the necessary calculations, and it is to be hoped that comprehensive handbooks will eventually be published which will perform the same function as the current steel handbooks. For more complex designs there will be an increasing demand for specialists in the use of timber as an engineering material. We may therefore expect the gradual emergence of the timber engineer, as we already have steel and reinforced concrete engineers. Nevertheless, the new developments in timber technique are first and foremost the concern of the architect because he will eventually decide how far they can contribute to the design of buildings in the future.



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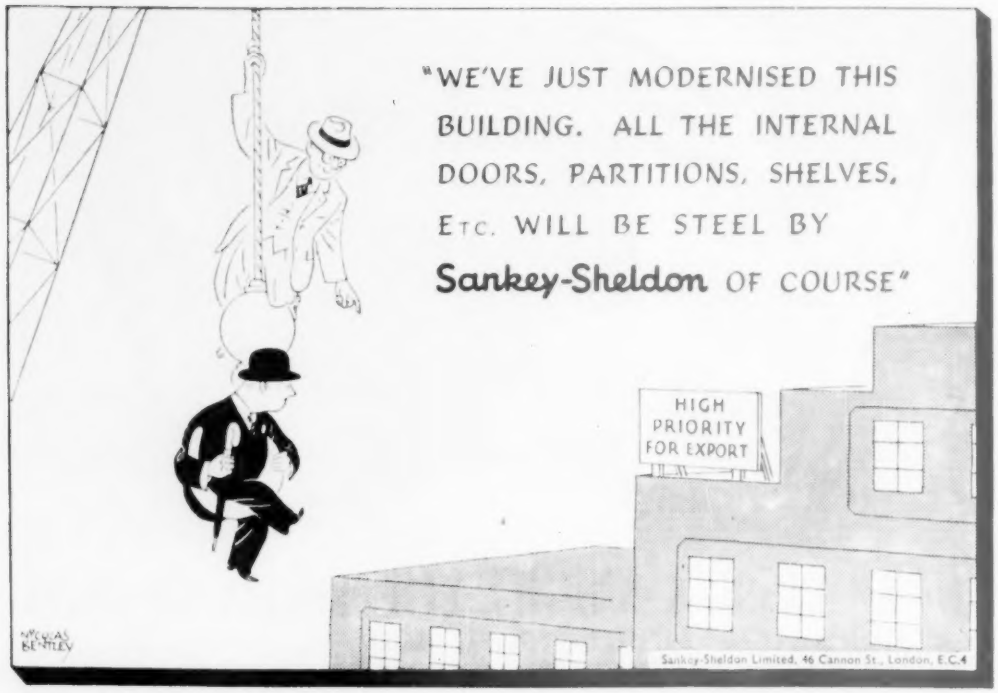
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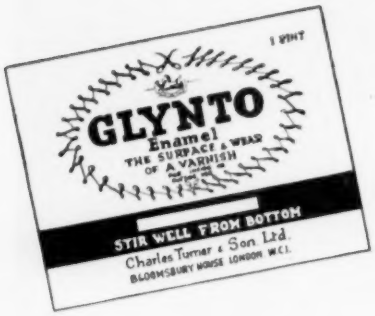

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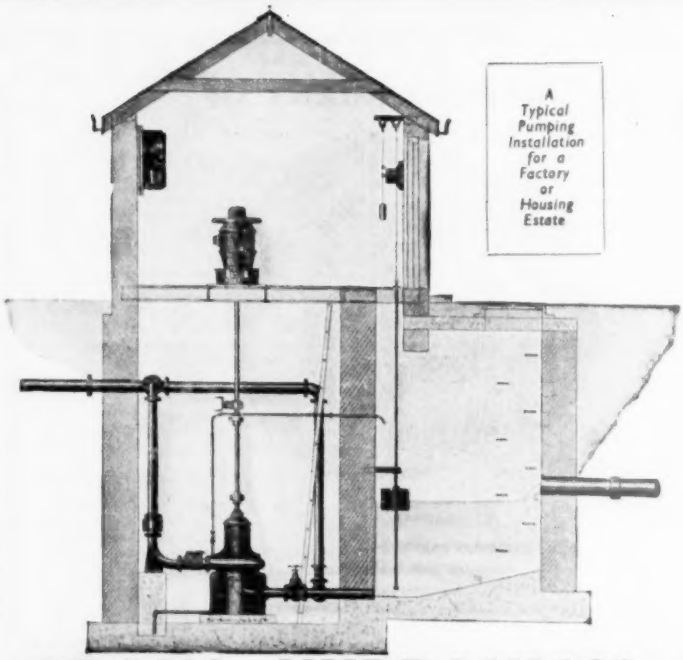

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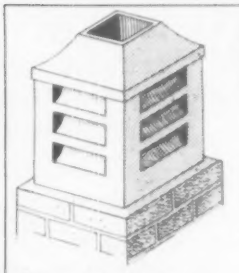

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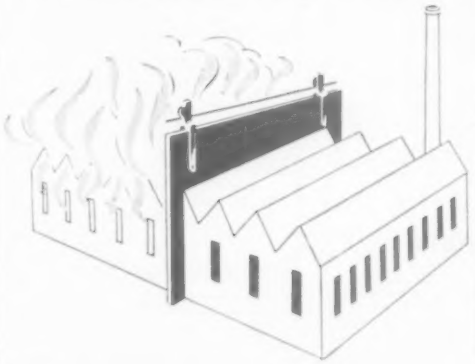

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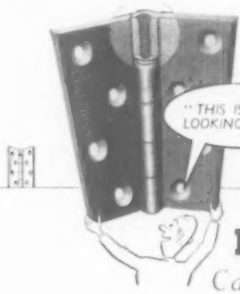

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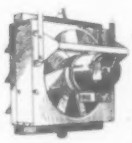

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All positions are progressive and pensionable, and vacancies occur in London, Birmingham, Manchester and Glasgow. Five-day week. Salary according to experience and ability. Details of training, experience, and salary expected should be sent to Truscon House, 35-41 Lower Marsh, London, S.E.1 (adjacent to Waterloo Station). All replies will be treated as confidential. 10094

THE UNIVERSITY OF SHEFFIELD.

BUILDING ALTERATIONS AND MAINTENANCE

GOOD DRAUGHTSMAN required, knowledge of quantities an asset. Salary £325 to £400 per annum according to experience. This post is subject to the University's Superannuation Scheme. Apply in writing to The Bursar, The University, Sheffield, 10. 14318

THE CIVIL SERVICE COMMISSIONERS invite applications for the following permanent appointments:—

(a) about 15 LANDS OFFICERS in the War Office.

(b) 1 ASSISTANT ESTATE OFFICER in the Ministry of Town and Country Planning.

There may be a few vacancies in other Departments. Candidates must be not less than 30 years of age on 1st January, 1950, and must have obtained Corporate Membership of the Royal Institution of Chartered Surveyors or the Chartered Auctioneers' and Estate Agents' Institute or the Land Agents' Society, or alternatively have obtained a University degree in Estate Management (B.A. Camb. or B.Sc. London). In addition, candidates will be expected to possess wide professional experience in private practice or in the service of a Local Authority or Government Department. For posts (a) candidates must have experience of Land Agency and/or Agricultural valuation. For post (b), preference will be given to applicants who have a sound knowledge of town and country planning as a background to large scale estate development and estate management. Inclusive London salary scales—£750-£1,000 (men), £650-£850 (women) — somewhat lower in the Provinces.

Further particulars and application forms from Secretary, Civil Service Commission, Scientific Branch, 7th Floor, Trinidad House, Old Burlington Street, London, W.1, quoting No. 2974. Completed application forms must be returned by 24th March, 1950. 14316

CITY OF LEEDS.

WORKS DEPARTMENT

APPLICATIONS are invited for the appointment of ESTIMATING CLERK at a salary of £420-£465 per annum (Consolidated). Candidates must have had a considerable experience of Estimating and Costing, preferably with a Local Authority, and/or Building Contractors. They should be capable of measuring without supervision, estimates for works of minor alteration. The appointment is subject to the provision of the Local Government Superannuation Act, 1937, and the successful applicant will be required to pass a medical examination. Applications should be forwarded in an envelope, suitably endorsed, to the undersigned not later than 12 noon on Saturday, 11th March, 1950. Canvassing (in any form, either directly or indirectly) will be a disqualification.

H. R. HUDSON, F.R.I.B.A., M.R.San.I.,
Director of Works.
City of Leeds Works Department,
Sweet Street, Leeds, 11. 14319

COUNTY OF LINCOLN: PARTS OF LINDSEY.

APPLICATIONS are invited for a TEMPORARY CLERK OF WORKS, to supervise the erection of new Police Buildings and Magistrates' Courts and Superintendent's and Inspector's Houses at the Civic Centre Site, Scunthorpe, at a salary of £12 12s. 0d. per week inclusive.

Candidates must have practical knowledge of all branches of the building trade and be experienced in the supervision and erection of buildings, capable of setting out, taking levels, measuring up, checking quantities, keeping records, and making reports.

The duration of the appointment is expected to be approximately 24 to 30 months. The work is expected to start March, 1950. The appointment will be terminable by one month's notice on either side.

Applications, stating age, qualifications and experience, with particulars of past and present employment, and accompanied by copies of three recent testimonials, must be received by the Architects, Messrs. Charles R. Pearson & Son, F.R.I.B.A., 18 Dalton Square, Lancaster, not later than 6th March, 1950.

H. COPLAND, Clerk of the County Council.
County Offices, Lincoln.
February, 1950. 14291

WANTED

CONSTRUCTION ENGINEER, CEYLON.

APPLICATIONS are invited for the post of CONSTRUCTION ENGINEER in the Public Works Department, Ceylon, on a fixed salary of £1,500 per annum for Europeans and Rs 18,000 per annum for Ceylonese, Indians and Pakistanis.

2. Further particulars may be obtained from the Office of the High Commissioner for Ceylon in London at 25 Grosvenor Square, London, W.1.

3. Applications for the above post should reach the office of the High Commissioner for Ceylon in London on or before Friday, 24th March, 1950. 14315

MINISTRY OF WORKS.

THERE are vacancies in the Chief Architect's Division for Architectural Assistants with recognised training and fair experience. Successful candidates will be employed in London and elsewhere on a wide variety of Public Buildings, including Atomic Energy and other Research Establishments, Telephone Exchanges, and Housing.

Similar vacancies also exist for Assistants with specialised knowledge and experience in stonemasonry, particularly in detailing and joining of ashlar and carved stonework.

Salary: Architectural Assistants £300-£525 per annum. Leading Architectural Assistants £500-£625 plus overtime. Starting pay will be assessed according to age, qualifications and experience. These rates are for London; a deduction is made in the Provinces.

Although these are not established posts some of them have long-term possibilities and competitions are held periodically to fill established vacancies.

Apply in writing, stating age, nationality, full details of experience, and locality preferred, to Chief Architect, W.G.10/T., Ministry of Works, Abell House, London, S.W.1. 10085

THE CIVIL SERVICE COMMISSIONERS invite applications for the following permanent appointments:—

(1) about 15 CIVIL ENGINEERS—14 vacancies in the Admiralty and at least 1 in the Ministry of Supply.

(2) about 6 QUANTITY SURVEYORS in the Admiralty.

There may be a few vacancies in other Departments.

Candidates must be not less than 30 years of age on the 1st January, 1950.

Candidates for posts (1) must be Corporate Members of the Institution of Civil Engineers and candidates for post (2) must be Corporate Members of the Royal Institution of Chartered Surveyors (Quantities Section). All candidates must have had wide professional experience. Specific experience is also laid down.

London inclusive salary scale (men)—£750-£1,000. Salaries for women and for posts in the provinces are somewhat lower.

Further particulars and application forms from the Secretary, Civil Service Commission, Scientific Branch, 7th Floor, Trinidad House, Old Burlington Street, London, W.1, quoting No. 2970. Completed application forms must be returned by 24th March, 1950. 14317

MINISTRY OF WORKS.

VACANCIES exist for ARCHITECTURAL ASSISTANTS at Risley (Warrington), Windscale (Cumberland) and Manchester, for drawing office duties in connection with Research Establishments. Candidates should be of British nationality and have had a recognised architectural training and fair experience.

Salary: ARCHITECTURAL ASSISTANTS, £283 per annum at age 21, with £20 additional for each year above that age to a maximum of £395 per annum.

LEADING ARCHITECTURAL ASSISTANTS, £470-£595 per annum.

Although the posts are not established, some of them have long term possibilities and competitions are held periodically to fill established vacancies. Hostel accommodation for men at reasonable cost is available at Risley and Windscale.

Vacancies also exist in London and other Regional Offices throughout the country.

Apply in writing, stating locality desired, age, training and experience, Chief Architect, WG10/AN, Ministry of Works, Abell House, John Islip Street, London, S.W.1. 14261

SALOP COUNTY COUNCIL.

COUNTY ARCHITECT'S DEPARTMENT

APPLICATIONS are invited for the appointment of ASSISTANT ARCHITECTS (on A.P.T. Grades III-IV (£450 to £525 p.a.).

The appointments will be subject to their termination to one month's notice in writing on either side, to the terms of the National Joint Council's Scheme of Conditions of Service, and to the provisions of the Local Government Superannuation Act, 1937. The successful applicants will be required to pass a medical examination.

Application forms may be obtained from the County Architect, A. G. Chant, F.R.I.B.A., Column House, London Road, Shrewsbury, to whom they must be returned, accompanied by copies of not more than three recent testimonials not later than Tuesday, 21st March, 1950.

G. C. GODBER, Clerk of the Council.
Shirehall, Shrewsbury.
February, 1950. 14324

BOROUGH OF BEDDINGTON AND WALLINGTON.

APPOINTMENT OF ARCHITECTURAL ASSISTANT.

APPLICATIONS are invited for the appointment of ARCHITECTURAL ASSISTANT at a salary in accordance with A.P.T. Grades VA/VI of the National Scales (£550-£20-£25 £660) plus London weighting. Applicants should hold the qualification of the Final examination of the R.I.B.A. or its equivalent. Experience is required in municipal housing schemes, flats, adaptations, estimating and supervision of works.

The appointment is subject to the provisions of the National Scheme and to one month's notice on either side.

Forms of application, which make provision for supplying the names of two referees, may be obtained from me, and on completion should be sent in envelopes endorsed "Architectural Assistant," to reach me not later than Saturday, 18th March, 1950.

Canvassing, directly or indirectly, will disqualify.

C. PETER CLARKE, Town Clerk.

Town Hall, Wallington, Surrey.
23rd February, 1950. 1410n

AYCLIFFE DEVELOPMENT CORPORATION.

APPOINTMENT OF ASSISTANT ARCHITECT FOR HOUSING WORK.

APPLICATIONS are invited for the above appointment at a salary in accordance with Grade A.P.T. V of the National Scheme of Conditions of Service, namely £520 per annum rising by two increments of £15 and one of £20 to a maximum of £570 per annum.

The appointment will be subject to the National Scheme of Conditions of Service made by the National Joint Council for Local Authorities' Administrative, Professional, Technical and Clerical Services, the Local Government Superannuation Act, 1937, and to one month's notice on either side.

Housing accommodation will be available if necessary.

Applications, stating age, qualifications, previous experience and present appointments and salary, together with the names of two persons to whom reference can be made, should be forwarded to the undersigned to arrive not later than the 18th March, 1950.

(sgd.) A. W. THOMAS, General Manager.

Seaton Aycliffe, Nr. Darlington.
24th February, 1950. 14322

COUNTY BOROUGH OF BELFAST.

EDUCATION COMMITTEE.

EDUCATION ARCHITECT'S DEPARTMENT.

APPLICATIONS are invited for the posts of SENIOR ASSISTANT ARCHITECTS on the permanent staff of the Education Architect's Department.

Candidates should be fully qualified and be capable of taking charge of building schemes in connection with the design and erection of school buildings. Applicants must not be more than forty-five years of age on the date of taking up the appointment.

The salary is £550 x £25 – £600 per annum plus £50 of living bonus at present £90 per annum. The commencing salary in each case will be determined in the light of the qualifications, ability and experience of the person appointed.

Preference will be given to suitably qualified ex-Service candidates.

Applications, endorsed "Appointment of Senior Assistant Architects," giving age and full particulars of education, qualifications and experience, accompanied by copies of three recent testimonials, must be lodged with the undersigned not later than 4 p.m. on Thursday, 16th March, 1950.

Canvassing in any form, oral or written, direct or indirect, will, if proved to the satisfaction of the Committee, disqualify a candidate for appointment.

JERRY DUNLOP, Town Clerk.

City Hall, Belfast.
February, 1950. 14323

BOROUGH OF HORNSEY.

ENGINEER AND SURVEYOR'S DEPARTMENT.

APPOINTMENT OF ARCHITECTURAL ASSISTANT.

APPLICATIONS are invited for the following temporary appointment:—

ARCHITECTURAL ASSISTANT, Grade I-III (A.P.T. Division of the National Scales) at a salary of £360-£495 per annum plus appropriate London Weighting Allowance. Commencing salary according to experience.

Applications, stating age, present and previous appointments, technical training, qualifications, experience, etc., together with the names of three referees, must be delivered to Mr. T. H. Melville Richards, A.M.I.C.E., M.I.Mun.E., Borough Engineer and Surveyor, Hornsey Town Hall, N.8, not later than the 20th March, 1950 (Monday).

Canvassing, either directly or indirectly, will disqualify.

H. BEDALE, Town Clerk.

Town Hall, Hornsey, N.8.
28th February, 1950. 14327

ARCHITECTURAL APPOINTMENTS VACANT

ASSISTANT required by London Architects. Must be capable of producing quick and imaginative sketch designs for a wide range of work. High standard of draughtsmanship essential.—Write, stating age, qualifications and salary required, to Box 2331, The Architect and Building News. 14285

ARCHITECTURAL Assistant required immediately. Intermediate standard, for varied and interesting work. Must be neat and accurate draughtsman with keen interest in design.—Box 2586, The Architect and Building News. 14311

ARCHITECT'S Assistant required. R.I.B.A. Inter. standard, experienced in preparation of working drawings and details of commercial buildings, alterations, etc. Salary in accordance with experience.—Apply with full particulars to Eric H. Davis, A.R.I.B.A., A.M.T.P.I., Staff Architect, Hillier Parker, May & Rowden, 77 Grosvenor Street, W.1. 14314

APPLICATIONS are invited for an experienced General Architectural Assistant to work in a branch office under the supervision of Brewery Architect's Department. Applicants should have sound knowledge of building construction, sanitation, be a quick and accurate draughtsman capable of preparing detailing drawings, surveys of sites and existing buildings, and in particular the preparation of specifications, checking of builders' estimates and accounts, etc.

Staff flat, canteen and salary finished. References will be required for those granted an interview.—Applications should be addressed to: The Secretary, Steward & Patteson Ltd., Pocklethorpe Brewery, Norwich. 14321

LONDON firm now engaged on large building schemes for medical and scientific purposes requires Architectural Assistant, qualified A.R.I.B.A., with office experience of surveys and the preparation of working drawings.—Write stating qualifications, etc., and salary required. Box 2644, Architect and Building News, or telephone Welbeck 8967. 14328

PERMANENT positions available for competent Senior Assistants or established London office. Salary according to experience, up to £650 per annum.—Box 2587, The Architect and Building News. 14312

SITUATIONS VACANT

ARCHITECTURAL Metal Workers require a Decorer/Draughtsman of considerable merit. Top salaried position for skilled man.—Apply: The Morris Singer Company, Hope House, Gt. Peter Street, Westminster, S.W.1. 10095

ARCHITECTURAL Draughtsman. Young man required as designer by old-established firm of Church craftsmen. Must be a practising member of the C. of E. Good salary to a suitable man. Staff canteen.—Apply: Box 2635, The Architect and Building News. 14325

GENERAL Foreman required to take charge of erection of reinforced concrete building in London area.—Write: Lavender McMillan Ltd., 54 Chelsea Common Road, Worcester Park, Surrey. 14320

SITUATIONS VACANT

APPLICATIONS are invited for post of qualified Designer/Draughtsman with thorough knowledge of catering planning and design, including kitchens, stores, dining rooms, etc. Successful candidate will be required to prepare plans for alterations, etc., as well as new plans. Salary £750-£1,000 per annum, according to qualifications and experience. Pension scheme in operation. Applications, stating age, qualifications, experience and present appointment, together with the names of two persons to whom reference may be made concerning candidate's knowledge and experience, should be marked "Draughtsman" and submitted within seven days to The Director of the Hospital Catering Advisory Service, King Edward's Hospital Fund, 24/26 London Bridge Street, S.E.1. 14326

REQUIRED as Service Inspector, an active structural or civil engineer who has had considerable experience in responsible supervising capacity in the erection of reinforced concrete structures, preferably with some design experience. Will be required to travel extensively in the British Isles but must live in the London area. Attributes required are agreeable personality, sound judgement on erection problems, and able to write concise factual reports.—Write, giving full details and salary required to Managing Director, The Trussed Concrete Steel Co., Ltd., 35/41 Lower Marsh, S.E.1. 10093

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LECTURES

UNIVERSITY OF LONDON.

A LECTURE on "The Plan and Planning Control" will be given by Professor Sir Patrick Abercrombie at 5.30 p.m. on 9th March, at The University of London, The Senate House (Entrance from Malet Street, W.C.1). Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.
14311

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CONTRACTS

BOROUGH OF MACCLESFIELD.

BATHS COMMITTEE.

TENDERS are invited for the RECONSTRUCTION of the SLIPPER BATHS at DAVENPORT STREET, MACCLESFIELD.

Bills of Quantities and Form of Tender may be obtained from the office of the Borough Architect, 3 Jordangate, Macclesfield, on or after Monday, 20th February, 1950, on payment of a deposit of £2 2s., which will be refunded on receipt of a bona-fide tender or return of all documents, unmarked, within seven days of their receipt by the depositor.

Tenders, in sealed envelopes (which will be supplied suitably endorsed) are to be delivered to the office of the undersigned not later than 12 noon on Tuesday, 14th March, 1950.

The Corporation does not undertake to accept the lowest or any tender.

WALTER ISAAC, Town Clerk.

Town Hall, Macclesfield.
13th February, 1950. 14310

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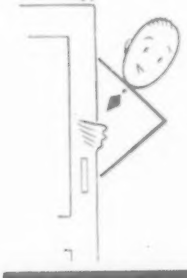

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